Mapping and Analysis of Research Capacities on Social Determinants of Health in Mexico (2005-2011) SDH-NET Project

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# Abbreviations and Acronyms

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<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ALAMES</td>
<td>Asociación Latinoamericana de Medicina Social (Latin American Social Medicine Association)</td>
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<tr>
<td>ALASAG</td>
<td>Alianza Latinoamericana de Salud Global (Latin American Global Health Alliance)</td>
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<tr>
<td>ANM</td>
<td>Academia Nacional de Medicina de México (National Academy of Medicine of Mexico)</td>
</tr>
<tr>
<td>CCINSHAE</td>
<td>Comisión Coordinadora de los Institutos Nacionales de Salud y Hospitales de Alta Especialidad (Coordinating Committee of the National Institutes of Health and High Specialty Hospitals)</td>
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<tr>
<td>CENAVECE</td>
<td>Centro Nacional de Vigilancia Epidemiológica y Control de Enfermedades (National Center for Epidemiological Surveillance and Disease Control)</td>
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<tr>
<td>CONACYT</td>
<td>Consejo Nacional de la Ciencia y la Tecnología (National Council for Science and Technology)</td>
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<tr>
<td>CONEVAL</td>
<td>Consejo Nacional de Evaluación de la Política de Desarrollo Social (National Council for the Evaluation of Social Development Policy)</td>
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<tr>
<td>CPEDSSM</td>
<td>Comité Permanente para el Estudio de los Determinantes Sociales de la Salud en México (Standing Committee for the Study of the Social Determinants of Health in Mexico)</td>
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<tr>
<td>SDH</td>
<td>Social Determinants of Health</td>
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<tr>
<td>GFCyT</td>
<td>Gasto Federal en Ciencia y Tecnología (Federal Government Spending in Science and Technology)</td>
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<tr>
<td>IMSS</td>
<td>Instituto Mexicano del Seguro Social (Mexican Social Security Institute)</td>
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<tr>
<td>IMSS-O</td>
<td>Programa IMSS-Oportunidades (IMSS Oportunidades Program)</td>
</tr>
<tr>
<td>INDESOL</td>
<td>Instituto Nacional de Desarrollo Social de México (National Social Development Institute)</td>
</tr>
<tr>
<td>INEGI</td>
<td>Instituto Nacional de Estadística y Geografía (National Institute of Statistics, Geography and Data Processing)</td>
</tr>
<tr>
<td>INSP</td>
<td>Instituto Nacional de Salud Pública (National Institute of Public Health)</td>
</tr>
<tr>
<td>ISSSTE</td>
<td>Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (Institute of Social Security and Services for State Workers)</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>PAEIPS</td>
<td>Programa de Acción Específico de Investigación en Salud (Specific Action Program of Health Research)</td>
</tr>
<tr>
<td>PEMEX</td>
<td>Petróleos Mexicanos (Mexican Petroleum)</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>PND</td>
<td>Plan Nacional de Desarrollo (National Development Plan)</td>
</tr>
<tr>
<td>PROBEI</td>
<td>Programa de Becas de Inicio a la Investigación (Start-up Research Grant Program)</td>
</tr>
<tr>
<td>PROSESA</td>
<td>Programa Sectorial de Salud (Health Sector Program)</td>
</tr>
<tr>
<td>SADSS-M</td>
<td>Seminario Académico en Determinantes Sociales de la Salud (Academic Seminar on the Social Determinants of Health)</td>
</tr>
<tr>
<td>SAEH</td>
<td>Sistema Automatizado de Egresos Hospitalarios (Automated Hospital Discharges System)</td>
</tr>
<tr>
<td>SEDENA</td>
<td>Secretaría de la Defensa Nacional (Secretary of Defense)</td>
</tr>
<tr>
<td>SEGOB</td>
<td>Secretaría de Gobernación (Secretary of the Interior)</td>
</tr>
<tr>
<td>SEMAR</td>
<td>Secretaría de Marina (Secretary of the Navy)</td>
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SEP  Secretaría de Educación Pública  
Secretary of Public Education  

SESA  Servicios Estatales de Salud  
State Health Services  

SICUENTAS  Sistema de Cuentas Nacionales y Estatales en Salud  
National and State Health Account System  

SIICYT  Sistema Integrado de Información sobre Investigación Científica Desarrollo Tecnológico e Innovación  
Integrated Information System for Scientific Research, Technological Development and Innovation  

SINAIS  Sistema Nacional de Información en Salud  
National Health Information System  

SINAVE  Sistema Nacional de Vigilancia Epidemiológica  
National Epidemiological Surveillance System  

SNI  Sistema Nacional de Investigadores  
National System of Researchers  

SNIS  Sistema Nacional de Investigación en Salud  
National Health Research System  

NHS  National Health System  

SPS  Seguro Popular de Salud  
Popular Health Insurance  

SSa  Secretaría de Salud y Asistencia  
Secretary/Secretary of Health  

UAM-X  Universidad Autónoma Metropolitana-Xochimilco  
Metropolitan Autonomous University, Xochimilco  

UNAM  Universidad Nacional Autónoma de México  
National Autonomous University of Mexico  


Presentation

This is a summary of the results of the document “Mapping of Research Capacities on Social Determinants in Health in Mexico (2005-2011)”. The objective of the work was to identify and analyze the status of national research on social determinants of health (SDH) and equity, including its stakeholders, themes, approaches, dissemination of results and impact on public policy. The ensuing diagnosis served as a basis for identifying the strengths and weaknesses in the SDH-related research capacities in Mexico, and for advancing concrete proposals regarding the development of human resources and training needs to strengthen SDH-related research.

To elaborate the document in extenso, a variety of sources and resources were used. Among them were official documents, such as the annual reports of the National Council for Science and Technology (CONACYT by its initials in Spanish), the National Development Plan (PND), the Health Sector Program (PROSESA), the Specific Action Program of Health Research (PAEIPS) and material from the Coordinating Commission of the National Health Institutes and High Specialty Hospitals (CCINSHAE). Information was also obtained from the web platforms of the Integrated Information System for Scientific Research, Technological Development, and Innovation (SIICYT) and the Directorate General of Social Communication of the Secretary of Health, as well as the National Health Information System (SINAIS). Other sources of information included documents from the National Council for the Evaluation of Social Development Policy (CONEVAL), and articles containing reviews and analyses of the National Health System (SNS). To locate specific data on SDH-related information, a comprehensive review of the health sciences literature –specifically– was undertaken (articles published from 2005 to May 2012), and an analysis was performed on the results of the calls for research proposals published by the CONACYT Health Sectorial Fund during the same period of time. This allowed us to trace researchers, institutions, themes, methodologies, capacities, and dissemination of results regarding SDH-related work in Mexico. Lastly, a National Consultation Forum was conducted to identify the specific education and training needs in human resources for SDH-related research. In the Forum, 32 researchers and decision makers deliberated on these themes and arrived at concrete conclusions and proposals.

This document is divided into four main parts. The first, which details the SDH-related scientific production in Mexico, is grounded on a comprehensive review of the literature and an analysis of the information compiled. The second examines both the National Health Research System in Mexico within the framework of the National Health System, and the mechanisms that facilitate the coordination and linkages of key public-private stakeholders, with special emphasis on national actions and strategies pursuing equity. The third part describes and analyzes existing SDH-related research capacities, also indicating their shortfalls. Finally, the fourth part contains conclusions and recommendations for reinforcing the SDH-related research capacity in Mexico. This last section also describes the limitations encountered while elaborating this report.
Introduction

A country situated in the geographic region of North America, Mexico is bordered to the north by the United States of America, to the south, by Belize and Guatemala, to the east by the Gulf of Mexico and the Caribbean Sea, and to the west by the Pacific Ocean. The Mexican Republic spans a surface area of 1,964,375 square kilometers and, in 2010, had a total population of 112,336,538 registered inhabitants (Institute of Statistics, Geography and Data Processing, or INEGI by its initials in Spanish, 2011). While Spanish is the official language in Mexico, 67 indigenous languages are also recognized (National Institute of Indigenous Languages, or INALI by its initials in Spanish, 2011). Its form of government is a democratic, representative, federal republic composed of 32 federal states. Its capital, Mexico City, is the seat of government and the Powers of the Union.

Figure 1. United Mexican States

Based on the net volume of its nominal gross domestic product (GDP), Mexico is the fourteenth largest economy in the world, the second in Latin America and the fourth in the Americas (The World Bank, 2012). It occupies the 57th place worldwide as regards its Human Development Index (HDI), with an index of 0.77 (United Nations Development Program - UNDP, 2011). Nonetheless, its economy is characterized by an unequal distribution of wealth, where municipalities which have HDIs similar to those of European countries, such as the Benito Juarez district in Mexico City, with a 0.9638 HDI and a 78-year life expectancy, coexist with others, such as Metlatonoc, in the state of Guerrero, with a 0.4903 HDI and a 40-year life expectancy (UNDP, 2010).
According to the demographic indicators, 78.4% of the Mexican population resides in urban areas. Its dependency ratio reaches 55.19 persons per 100 inhabitants of productive age (15-64 years), and its literacy rate is 93.1%. Its global fertility rate is low (2.2), with a population growth rate of 1.1% per year (Pan American Health Organization - PAHO, 2012). Marked by steep international migration, Mexico indicated a negative net migration rate in the second quarter of 2012, consisting of 27.6 persons moving abroad during that period per 10 thousand inhabitants (INEGI, 2012).

Development indicators in Mexico such as education, income, employment (socioeconomic level) and place of residence (rural or urban) present broad differences, with a Gini coefficient of 0.45 in 2010 (President’s Office, 2011) indicating an unequal income distribution among its inhabitants. The average schooling among the population aged 15 years and above is of 8.5 years, with the figure oscillating according to the type of locality. For instance, in rural contexts, schooling averages 6 years for males and 5.7 years for females, while, in urban contexts, the figures climb to 9.5 and 8.9 years, respectively (INEGI, 2010).

In terms of employment, evidence reveals major differences between genders. The rate of participation in remunerated work is higher among males of all ages (67 vs. 36). However, the participation of females in the labor market rises with schooling (44% among women with secondary and above schooling; vs. 24.6% among women with no schooling at all) (INEGI, 2010).

The social inequalities reflected in these indicators are linked to the health status of the population. For instance, the epidemiological profile in Mexico remains mixed, as the population continues to suffer from infecto-contagious diseases coupled with the burden of chronic-degenerative diseases, mental health disorders, and injuries.

Table 1. Major causes of morbidity and mortality in Mexico, 2010

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>MORBIDITY</th>
<th>MORTALITY</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Acute respiratory infections</td>
<td>Heart diseases</td>
</tr>
<tr>
<td>2</td>
<td>Intestinal infections caused by parasites</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>3</td>
<td>Urinary tract infections</td>
<td>Malignant tumors</td>
</tr>
<tr>
<td>4</td>
<td>Ulcers, gastritis and duodenitis</td>
<td>Accidents</td>
</tr>
<tr>
<td>5</td>
<td>Acute otitis media</td>
<td>Liver diseases</td>
</tr>
<tr>
<td>6</td>
<td>Gingivitis and periodontal diseases</td>
<td>Cerebrovascular disease</td>
</tr>
<tr>
<td>7</td>
<td>High blood pressure</td>
<td>Assault (homicide)</td>
</tr>
<tr>
<td>8</td>
<td>Conjunctivitis</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>9</td>
<td>Intestinal amoebas</td>
<td>Pneumonia and influenza</td>
</tr>
<tr>
<td>10</td>
<td>Non insulin dependent diabetes mellitus</td>
<td>Certain perinatal conditions</td>
</tr>
</tbody>
</table>

Source: National Center for Epidemiological Surveillance and Disease Control (CENAVECE by its initials in Spanish, 2012)

The overall mortality rate in Mexico is 5.1 per 1,000 inhabitants (5.8 for males and 4.4 for females). Life expectancy at birth is 73.4 years for males and 78.1 years for females. Maternal mortality in 2010 was 51.5 per 100,000 live births. Table 1 describes the ten major causes of morbidity and mortality in the overall population for 2010.
1. SDH-related scientific production in Mexico

The SDH theme has acquired special relevance in Mexico during the past few years, since it is intimately linked to equity, and this concept has been at the core of public policy for the past six years. Although there is no national SDH report to aid in understanding both the scope of the problem and the evolution of policies conducive to equity, particularly on health, the National Development Plan (2007-2012) has identified equity as a priority that must be tackled by social programs and public policy at the federal, state and municipal levels (Secretary of Health or SSa by its initials in Spanish, 2007). This position has been reflected in the allocation of funds towards research on issues associated not only with inequality in health care and health status among vulnerable groups, but also with access to health care and quality of service.

The scientific production of knowledge on SDH in Mexico was identified for the period between 2005 and 2011 under a two-faceted comprehensive review of medical and health sciences journals. The first phase comprised searches of Medline information sources involving Pubmed, the Evidence Portal and the Lilacs and Artemisa databases. The second entailed hand searching in Mexican health journal publisher sites, such as Medigraphic, Imbiomed, Nieto Editores and Redalyc.

The total number of documents yielded by search engines ascended to 1,885 articles, of which 145 documents on SHD were manually selected using a systematic screening procedure conducted in dyads. The research topics most frequently addressed in the articles reviewed were: health status (20%); others –comprising articles on migration, health policies, government programs, life conditions, culture, values, environment, and tobacco, substance and/or alcohol consumption– (14%); health systems (12%); and nutrition and obesity (12%). The majority of these (70%) were based on quantitative approaches supported by surveys.

According to the review, the following population groups have been studied most frequently: women (18%), the elderly (14%), children (12%) and populations living in poverty (12%). This reflects, on the one hand, the attention paid to maternal and reproductive health, one of the major challenges in Mexico today, and, on the other, the interest shown by researchers in groups that are socially underprivileged not only as a result of their multifaceted deprivation status, but also due to the insufficient and inadequate attention they have received.

On analyzing the results of the systematic review, it was observed that, while researchers publish their findings both in national and international scientific journals in Spanish, and English; surprisingly, 87% of the identified articles were published in international scientific journals in English language, and only 6% in Spanish.

The analyses of research projects sponsored under the CONACYT Sectorial Fund for Research on Health and Social Security were hand searched for the period 2005-2012. Of the total of 882 projects funded in that period of time, 106, or 12%, dealt with SDH-related topics. The issues most studied – representing 50% of the grants – included health systems (24%), health status (13%), nutrition and obesity (13%) and environmental health (12%).
The population groups most studied in these projects were: children (15%); women (11%); workers and employees\textsuperscript{1} (10%); and adolescents (9%). The high proportion of projects dealing with the general population (17%) is explained by the fact that most of the environmental health projects examine effects on the population groups that reside in certain localities and regions. This category includes projects with unspecified populations, adults, and males.

Finally, almost half of the projects funded from 2005 to 2012 were carried out by the National Institute of Public Health (INSP) (43.4%), which indicates the significant interest of this institution in focusing its research on SDH-related issues. The Mexican Social Security System (IMSS) ranked second (11.3%), followed by the National Autonomous University of Mexico (UNAM) (6%).

2. Analysis of the National Health Research System in Mexico

To understand the National Health Research System in Mexico (SNIS), it is necessary first to have a brief description of the National Health System (SNS) and its links with other sectors. The SNS is defined as a group of federal and state-level entities in the public and private sectors which provide services to the population residing in Mexican territory, with the objective of enhancing their access to health care. The public sector encompasses social security institutions, such as the IMSS, the Institute of Social Security and Services for State Workers (ISSSTE), Petróleos Mexicanos (PEMEX), the Secretary of Defense (SEDENA), the Secretary of the Navy (SEMAR). It must be noted that the social security institutions mentioned above are financed by government, and by employers and employees, and each institution has its own facilities and personnel. The SNS also includes other institutions that serve individuals without social security, such as the Popular Health Insurance Program (SPS), the Secretary of Health or Secretaría de Salud (SSa), the State Health Services (SESA) and the IMSS-Oportunidades Program (IMSS-O).

Among its principal functions, the federal government is responsible for guiding the SNS through the intermediary of the Secretary of Health. This entails the following duties: strategic planning of the health sector; definition of priorities; intra and inter-sectorial coordination; regulation of health care and sanitation; and evaluation of all related services, programs, policies, institutions and systems. Through SINAIS, the Directorate General of Health Information of the Secretary of Health is responsible for collecting and processing information generated in Mexico. SINAIS subsystems include the National Epidemiological Surveillance System (SINAVE), the Automated Hospital Discharges System (SAEH) and the National and State Health Account System (SICUENTAS, among others). Regarding research, SNS relies on 13 National Institutes of Health and various IMSS research centers that conduct research on biomedicine, clinical medicine and public health.

Under the Directorate General of Health Research Policies of the Secretary of Health, the Coordinating Commission of the National Institutes of Health and High Specialty Hospitals (CCINSHAE) coordinates efforts to improve the Mexican environment where research

\textsuperscript{1} Including themes associated with occupational health and service quality among health system personnel.
careers are developed, and research in general is regulated, financed, interlinked, and controlled. **CCINSHAE** also improves health research performance by establishing national and international alliances and agreements with the academic, corporate and industrial sectors. It circulates information on funding opportunities, and scientific-academic exchange prospects for researchers. Finally, through the Directorate General of Social Communication, it describes and disseminates for the scientific community and the general population, the relevant academic and scientific developments.

On another front, the Regulation of the General Health Law on Health Research clearly stipulates the **SSa** guidelines and principles governing scientific and technical research for health. Among other things, research and technology must be ethically directed towards improving actions that protect, promote, and restore the health of both individuals and society as a whole.

It is important to point out that the responsibility for formulating national science and technology policy in Mexico lies with **CONACYT**. The Council, which works closely with **SSa** to support the development of science and technology for health, branches out into six strategic areas: (1) Postgraduate Studies, Fellowships and Scholarships, (2) Technological Development and Innovation, (3) Scientific Development, (4) Regional Development, (5) Planning and International Cooperation, and (6) Research Funds.

In addition, Mexico’s Specific Action Program of Health Research (**PAEIPS**) falls under the aegis of **PND** and **PROSESA**, which, in turn, are designed and implemented by the federal government every six years, with the beginning of each presidential term –it must be noted that in Mexico there is no re-election, and the period a President of the Republic of Mexico stays in office is only six years--. To achieve its goal of improving the quality, quantity and impact of scientific research, **PAEIPS** ensures that: financial support is available, research responds to national problems, and the health research system remains decentralized. With a long-term focus and vision as one of its basic principles, **PAEIPS** is able to make persistent progress in health research priority issues (**CCINSHAE**, 2007).

The Program places special emphasis on promoting the research career through strategies such as: improved employment conditions, salary bonuses, research project awards, publication of articles, and annual health research meetings. Financing for these operations is obtained under the **CONACYT** Sectorial Fund for Research in Health and Social Security. Resources are devoted to Mexico’s health priority areas, and are offered through annual calls for research proposals.

It is important to mention that **PAEIPS** clearly poses a linkage between social and biological factors throughout the various phases of development, emphasizing the relevance of these factors for public health. Specifically, the Program stresses the need to understand SDH as an essential component for improving the quality of life of the population. It identifies key SDH in Mexico, and describes the vulnerable groups that are most affected by the inequities associated with the process of globalization. It also promotes knowledge translation – from research to action – as a highly useful tool for policy and program design.
The *PAEIPS* includes the national health research priorities in Mexico, which emanate from the challenges detected by this program. Such priorities fall under seven major research areas, namely: biomedical research, genomic medicine, clinical research, technological innovation, social health research, occupational health and environmental health. These priorities are incorporated under Strategies 1, 2 and 3 of *PAEIPS*’s first objective: promoting scientific research to improve the health and welfare of the population. However, when strategies are translated into specific goals, these priorities tend to fade out of sight and give way to financial, infrastructure and administrative concerns. There seems to be a discontinuity between the establishment of research priorities and their strategic and/or political inclusion at the moment of implementing health policy in Mexico.

Mexico has yet to adopt a distinct policy or an official posture on positioning SDH in the public policy national agenda, although, for decades, the federal government has been supporting an equity approach in all its national actions and strategies. For instance, the “*Vivir Mejor*” (Live Better) strategy introduced by the present administration (2007-2012) channels all government strategies towards one objective: sustainable human development, with the view of preventing scattering and optimizing public investments (Secretary of the Interior, or *SEGOB* by its initials in Spanish, 2007). In charge of coordinating Mexico’s social policy, the *Vivir Mejor* initiative has grouped public policies under three main fields of action: 1. Promoting the capabilities of Mexicans, particularly children, by ensuring their access to education, health care and decent housing; 2. Providing a social safety net susceptible of preventing catastrophic losses in the poorest families who are affected by disease or job loss; and 3. Providing the entire population with access to formal employment, through reinforced coordination between social and economic policies. Furthermore, under the principle of institutional coordination, *Vivir Mejor* takes into account and supplements ongoing programs with innovative actions in order to meet the objectives of *PND*, its corresponding sectorial and special programs, and the Millenium Development Goals to which Mexico is committed as a member of the United Nations.

### 2.1 National strategies for supporting health research

As previously mentioned, *CONACYT* is the agency in charge of coordinating national strategies for the development of research, technology and innovation. Its Technological Development and Innovation Office not only fosters technological research, development and innovation among corporations in the economic sectors of Mexico, it also promotes the linkage of these companies among themselves and with the academic and research sectors, through applicable national and international programs, projects and support of different kinds. Simultaneously, the agency’s Scientific Development Office is responsible for designing, developing and implementing support programs and policies to promote and enhance the development of scientific research. It is also in charge of facilitating and reinforcing academic development, thus contributing to Mexico’s productivity, competitiveness and growth in economic and social terms. Furthermore, this Office provides scientific consultation services to the various departments and organs of the Federal Public Administration, state and municipal governments, and agencies in the public, social and private sectors. The following programs fall under the scope of the Directorate General of Scientific Development: the National System of Researchers (*SNI*);
Basic Science and Applied Science Development; the Thematic Research Networks; Repatriations Program; Residential Sabbatical and Postdoctoral Grants; Bilateral Cooperation; and International Consultation on *Curriculum Vitae Único-CVU (CONACYT)*.

The Mexican government has implemented a series of mechanisms to stimulate research for health, with special emphasis on its priorities. Following is a brief summary of current federal support programs for the advancement of human resources for research:

*The Institutional System of Medical Science Researchers (SSa)* promotes and compensates health researcher education, development and permanence.

*The Performance Incentives for Medical Science Researchers (SSa)* features an annual recognition, awarded by SSa, as an economic benefit for those researchers whose performance has been outstanding in terms of research and academic work during the previous year.

*The Start-up Research Grant Program (PROBEI)* encourages youth who are initiating their professional careers to conduct health research under scientific, creative and multidisciplinary approaches.

*Support for postgraduate studies and grants (CONACYT)* provides the population with access to high-level studies (masters, PhDs and specializations) in academic institutions of excellence both within Mexico and abroad.

*The National System of Mexican Researchers (SNI)* is the national program that contributes the most to the research career in Mexico. With the mission of recognizing the work of those who devote themselves to the production of scientific knowledge and technology, SNI confers the title of national researcher on meritorious researchers based on a peer reviewed evaluation. In addition to this designation, which symbolizes the quality and prestige of the bearer’s scientific contributions, national researchers are awarded economic incentives according to their assigned level. The over-arching objective of SNI is to promote and elevate the quality, not only of scientific and technological research, but also of innovation, in Mexico, on the basis of evaluation. SNI researchers are classified into seven fields of knowledge: (I) Exact Sciences, (II) Life Sciences, (III) Health Sciences, (IV) Humanities and Behavioral Sciences, (V) Social and Economic Sciences, (VI) Agricultural Sciences and Biotechnology and (VII) Science and Engineering Technology (*CONACYT*, 2010; 2012).

According to SNI records, its membership totaled 17,639 national researchers in 2011 (*SIICYT*, 2011), with a male-female ratio of 2:1 ("Atlas de la Ciencia Mexicana," 2011). From 2005 to 2010, distribution by education level was analogous, with the majority of researchers (approximately 90%) holding doctorates. The following fields of knowledge concentrated approximately 40% of total SNI members during that period: (III) Medicine and Health Sciences, (IV) Humanities and Behavioral Sciences and (V) Social Sciences.
2.2 National research funding strategies

As an investment in research and development, Mexican expenditure in science and technology is a vital parameter in terms of global competition, and it includes public and private funds. Federal Government Spending in Science and Technology (GFCyT) is broken down into three main subgroups: (1) General advancement of knowledge, including curiosity-driven research; (2) Economic development, including agricultural and industrial production and technology, production, distribution and rational use of energy, and infrastructure and general planning of land use; and (3) Health and the environment, including exploration and exploitation of the earth and space, protection and improvement of human health, social structures and relations, and environmental control and care (SIICYT, 2011). As a member of the Organization for Economic Cooperation and Development (OECD), Mexico ranks lowest in Science and Technology (S&T) spending, with an investment of only 0.4% of its Gross Domestic Product (GDP); this is despite the fact that, in 2006, the Science and Technology Law recommended investing at least 1% of the GDP in research. In 2010, Mexico’s total GFCyT reached 0.42% of its GDP, with the following five sectors representing 93.8% of national investments: CONACYT (34.9%), Public Education (29.1%), Energy (17.6%), Health and Social Security (7.5%), and Agriculture (4.7%).

The federal government has set up a research funding system under CONACYT, thus requiring the Council to interact not only with national ministries, state-level governments and federal agencies, but also with academic and scientific institutions and private enterprises in the science and technology system.

2.3 National strategies for networking and strengthening interdisciplinary research

CONACYT has implemented two programs to reinforce interdisciplinary research and establish partnerships among the various sectors and institutions. First, the Thematic Research Networks are responsible for organizing research groups with researchers, technologists and businessmen who share interests and are willing to collaborate. Network participants contribute their knowledge, skills and capabilities synergistically to pursue solutions to strategic problems and themes for the development of Mexico. Their objective is to promote and enhance national scientific alliances that address strategic themes concerning national problems (scientific, technological and social), and procure linkages among academic, government and societal actors. By 2011, 20 thematic research networks had enlisted a total of 3,494 researchers and 132 institutions. However, only four of these address SDH-related topics, namely: (a) Complexity, science and society, (b) Poverty and human development, (c) Aging, health and social development, and (d) Hydrometeorological disasters and climate. These four networks are comprised of 22 task forces which, in turn, are made up of researchers from a wide variety of disciplines and institutions throughout the country of Mexico.
**CONACYT** has also set up Public Research Centers through the Undersecretariat of Higher Education. This system of centers encompasses 27 research institutions pertaining to the key areas of scientific and technological knowledge (Secretary of Public Education – **SEP**, 2012). The Centers are divided into three major groups according to their objectives and areas of specialization: Exact and Natural Sciences (10 institutions); Social Sciences and Humanities (8 institutions); Technological Development and Innovation (8 institutions); and Postgraduate Funding (1 institution). In 2011, 3.15 million dollars (data on October 24th) were channeled to eight projects conducted by Public Research Centers.

### 2.4 Health research information management system

Given its broad statistical database on the health of the Mexican population, **SINAIS** plays a vital role in assisting SDH-related research work. In a wider context, the Geography and Statistics Information Law regulates the capture, production and processing of data required to plan, program, budget and control SNS activities, as well as the status and evolution of public health. Regarding access to information on health, legal provisions have been recently issued to ensure transparency of government actions in programs, projects and goals, as well as in actual spending. For instance, the Federal Law of Transparency and Access to Public Government Information was enacted to “provide all that is necessary for all persons to be able to access information held by the Powers of the Union, the autonomous constitutional bodies, the bodies with legal autonomy, and all other federal organs.” (Congress of the Union, 2012).

### 3. Description and analysis of the SDH-related research capacities in Mexico

This section provides a description of infrastructure – understood as the set of elements or services considered necessary to develop a given activity – that exists for SDH-related research to be conducted as a basis for revising public policies and programs towards fighting inequity in health.

The federal government holds that infrastructure is synonymous of economic, social and human development. While there are no academic programs in Mexico designed specifically for training human resources in SDH-related research, a number of institutions do include courses on SDH in their curricula. Most of such courses, however, do not specifically include contents on how to conduct research under this approach. Although there is a lack of formal infrastructure support for developing research on SDH-related themes, the present mapping exercise revealed a number of key resources for developing and strengthening SDH-related research capacities. The national institutions and networks identified are described below.
3.1 Institutions/work groups

The aforementioned literature review, the National Consultation Forum and the analyses of health research funding allowed identifying which discussion and debate groups, key institutional actors, research groups and sponsors implement actions in favor of health equity promotion, especially regarding SDH. Of the 46 groups identified, 16 pertained to government institutions, 7 to SNIS, 19 to academic institutions (both public and private), and 4 were non-profit organizations. At least two institutions were found to specifically include the SDH theme in their academic and research programs: INSP, which offers 40 and 60-hour degree courses and 40-hour summer courses on SDH; and the Metropolitan Autonomous University of Xochimilco (UAM-X by its Spanish acronym), which also teaches the SDH research approach under its Social Medicine program.

3.2 Collaboration, exchange and discussion networks

Mexico has five collaborative networks that address SDH-related topics. First, the Latin American Social Medicine Association (ALAMES by its initials in Spanish), which concentrates a large number of national-level participants from the academic, health and other sectors, seeks to maintain a leading political role in defending the right to health care. Second, the Academic Seminar on the Social Determinants of Health (SADSS-M), founded in 2011 by INSP, offers a space for exchanging findings, holding discussions and conducting collaborative work regarding SDH-related research. Third, the Latin American Global Health Alliance (ALASAG by its Spanish acronym), which is a regional collaborative network, promotes horizontal collaboration for Latin America. It is dedicated primarily to driving the global health / SDH approach as a key component of development of human resources and training, research, and interinstitutional cooperation. Furthermore, the UNAM has a University Seminar on Social Issues (Seminario Universitario de la Cuestión Social) aimed both to consolidate a national network of researchers on social issues, and to expand its academic relations with other universities and international organizations. Lastly, the National Academy of Medicine of Mexico (ANM) has appointed a Standing Committee for the Study of the Social Determinants of Health in Mexico (CPEDSSM). With the participation of 14 ANM members, the Committee is responsible for analyzing SDH in Mexico, the overall recommendations on the subject, and the WHO principles of action, with the aim of enhancing SDH-related knowledge.

3.3 National and international research funding organizations

Funds for conducting research on health and its social determinants flow from two fundamental strands: government programs and private – both national and international – programs. The first include the CONACYT research support funding system described elsewhere in this document and other federal agencies, such as the National Social Development Institute (INDESOL). Several public state-level universities also allocate funds from their internal budgets to SDH-related research projects. Additionally, in the mapping exercise we identified three public institutions at the national level, ten private
international agencies, and three public agencies at the international level that provide funds for SDH-related research.

3.4 Forums for disseminating research results

Several strategies are used for disseminating SDH-related research results in Mexico, such as national and international journals, conferences, congresses, seminars, workshops and symposia. In Mexico, there are 250 registered scientific journals in health sciences and medicine. SDH-related research findings are published in these types of journals at the national level. Additionally, there are over 100 printed and online publications to disseminate findings in health and social sciences, i.e. newsletters, bulletins, newspapers and fact sheets. Lastly, information is also disseminated using Interactive Communication Technologies (ICT), such as web portals, and social networks, including Facebook and Twitter.

3.5 Results of the National Consultation Forum on SDH research

This section is based on the findings of the National Consultation Forum on SDH Research, where 34 SDH-related stakeholders worked together to identify not only the institutional capacities and personal competencies already in place, but also the training required, to strengthen SDH-related research in Mexico. The following tables present the questions addressed in the Forum and an outline of the results.

3.5.1 Institutional/Infrastructure Support: Which institutional capacities in Mexico must be strengthened, and which must be created, to conduct research on SDH?

<table>
<thead>
<tr>
<th>Existing Capacities</th>
<th>Capacities to be developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter and intra-institutional research collaboration</td>
<td>SDH-related research project management units in academic institutions</td>
</tr>
<tr>
<td>International collaboration in education and training of human resources (teaching)</td>
<td>Public/private support networks focused on SDH</td>
</tr>
<tr>
<td>Financial resources earmarked for research on SDH of vulnerable groups</td>
<td>Current database of SDH-related researchers, projects and results</td>
</tr>
<tr>
<td>National and international forums for disseminating research results</td>
<td>Collaborative teaching and research networks formalized under institutional MOU agreements</td>
</tr>
</tbody>
</table>
### 3.5.2 Capacities to be strengthened: Which capacities must be reinforced in actors working with SDH (researchers, teachers, funding representatives, program decision makers/managers) in order to promote equity?

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Teachers</th>
<th>Funding Representatives</th>
<th>Decision Makers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative and qualitative analytical methodologies</td>
<td>Use of Interactive Communication Technologies (ICTs) in teaching</td>
<td>Policy analysis</td>
<td>Policy analysis</td>
</tr>
<tr>
<td>Creation of collaborative networks and their linkage with other disciplines, society, other sectors, peers and students</td>
<td>Leadership</td>
<td>Methods and techniques for prioritizing issues</td>
<td>Methods and techniques for prioritizing issues</td>
</tr>
</tbody>
</table>
### 3.5.3 Competencies required for research: What competencies do individuals require to conduct research on SDH*?

<table>
<thead>
<tr>
<th>Theory and Concepts (Knowledge)</th>
<th>Practical Skills (Skills)</th>
<th>Attitudes (Behaviors)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDH (conceptual bases)</td>
<td>Lobbying, leadership and advocacy</td>
<td>Social Commitment</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>Formation and interlinkage of intersectoral and interdisciplinary networks</td>
<td>Ethics</td>
</tr>
<tr>
<td>Social anthropology, demographics, law and sociology</td>
<td>Oral and written communication (translation)</td>
<td>Respect for human rights</td>
</tr>
<tr>
<td>Library science</td>
<td>Critical analysis of results</td>
<td>Stress management</td>
</tr>
<tr>
<td>Philosophy and ethics</td>
<td>Translation of research: community, policies, programs and sectors</td>
<td></td>
</tr>
<tr>
<td>National history</td>
<td>Management of human and financial resources</td>
<td></td>
</tr>
</tbody>
</table>
3.5.4 Research Methodology: What are the most appropriate research methods and techniques for studying SDH?

The most appropriate methods for studying SDH are mixed methods that allow for methodological triangulation from quantitative and qualitative approaches, among others. For instance, descriptive survey studies supported with qualitative techniques, such as focus groups and semi-structured interviews, permit determining the scope of the research problem while defining causal pathways. Interdisciplinarity is another tenet of SDH-related research. Anthropology, psychology, demography, pedagogy, economics and health sciences are among the disciplines that must address SDH.

Additionally, a solid knowledge about research methods is fundamental to obtain reliable results. Consistency should be ensured not only between research methods and questions, but also among theories, instruments, methods, analyses and results.

Finally, SDH-related research should include ideological and social elements, and problems should be contextualized at all levels (macro-micro, individual-social). It is important to take the research subject into account, and to share the knowledge acquired with the community. This requires fieldwork under a research-action approach.

3.5.5 Other variables: What SDH-related variables should be studied in Mexico, other than those already being considered?

The SDH most analyzed in Mexico are those provided under the SDH / WHO model, namely: gender, migration, education, income, occupation, employment, poverty, age, ethnicity and access to health services. However, others have been identified locally, among them: social violence, corruption, migration, human rights, the subjective aspect of SDH, social recognition, housing, wealth, transportation, food, the cumulative effect of SDH (life course approach), disability and health policies.

3.5.6 Research Impact: How has SDH-related research influenced policies and programs promoting equity in health?
In the Forum, consensus was reached that it is extremely difficult to objectively measure the impact of SDH-related research on public programs and policies in Mexico. On one hand, social research rarely measures its impact on policies and programs; on the other, and this is worth noting, findings are often published in foreign journals, in English (given their recognition and impact factor), without ever reaching the key stakeholders in Mexico.

3.5.7 Potential Impact of Research: What is needed for SDH-related research to have greater impact on policies and programs promoting health equity?

Consensus was reached that the impact of research depends largely on the following conditions: asking for the involvement of decision makers and communities in the design and development of the research project; focus on national PNS priorities; investment of considerable financial resources; selection of a “trendy” global theme; submission of the proposal by a decision maker; linkage of the project with other national issues or priorities; translation and dissemination of the evidence for use by decision makers; convergence of the results with sectorial or political party interests; necessary intervention of other sectors for the solution of the research problem; management of the project by a researcher with sufficient skills to place his/her findings on the political agenda; and participation of decision makers who are sensitive to the issues of inequality and SDH. It is fundamental to ensure that the research themes impacting public policy pursue the interests of the communities and prove cost effective. It is also important to disseminate research results through non-academic media (science journalism). Furthermore, staff (an office or an agency with marketing or liaison functions) should be set up to follow up on results, so that research is in fact translated into policies and programs. Finally, it is recommended that research activities be articulated in work groups.

4. Conclusions and recommendations for reinforcing SDH-related research capacities in Mexico

The elaboration of this report led to a set of conclusions regarding overall health research and, specifically, SDH-related research in Mexico. In addition, the present analysis provided a basis for contributing specific recommendations to develop and/or strengthen SDH-related research capacities at the national level.

Conclusions

While PAEIPS has stimulated national research on priority health issues in Mexico, such as equitable access to health care and service quality, it has not included research on SDH as an indicator under its objectives. Hence, SDH-related research does not, as of yet, explicitly represent a priority issue on the health research agenda in Mexico.

Detailed information on SDH-related research remains unavailable. The CONACYT platform with data on health research, funding, stakeholders and institutions is not updated regularly, and does not meet the objectives stipulated therein. The reasons for this are multiple, but notable among them is the fact that SDH have not been positioned as an entity
that can be addressed specifically, SDH-related studies have not been disaggregated as a distinct research theme, and an intersectoral focus, a required component in their approach, has not been attained.

The foregoing constraints are compounded by the minimal support provided for training, advancing and retaining researchers devoted to SDH-related research. Priority is given to themes associated with basic sciences, technology development and technological innovation, while the social aspects of health tend to be positioned in second place by the research institutions in Mexico. Official financing priorities frequently bypass social research projects and efforts to implement social/community studies. Such studies, however, are fundamental to understanding and solving some of the priority health problems in Mexico.

In addition to the above setbacks, SDH-related research development is undermined by the reduced number of researchers who are interested in working on these issues in Mexico. Since very few academic institutions include the teaching of SDH-related research methods among their priorities, thereby helping researchers to grow in this field and supporting the institution to grow as well, there is no guarantee that working on SDH will fructify in sufficient funding to support research projects that yield results of enough quality to be published.

Also identified in our mapping exercise was the fact that researchers who work on health issues generally prefer to publish their findings in foreign scientific journals with a higher impact factor than that attributed to national journals. This is a delicate situation where, on the one hand, government agencies such as CONACYT and CCINSHAE strive for the development of science to improve the health status of the Mexican people, while, on the other, researchers feel compelled to publish their results in international journals, mostly in English, thereby excluding national readership (eg., other researchers, decision makers, and civil society). It is noteworthy that the amount of financial incentive awarded for scientific productivity in Mexico is partly determined by the number of citations made of the published works. What is more, the incentives are higher when the scientific work is first published in influential foreign scientific journals, generally in English. Consequently, researchers are inclined to produce material to be published and available to their foreign colleagues, excluding important stakeholders on the national scene, and collaboration seldomly occurs between decision makers and researchers. This perverse paradox clearly discourages the publication of research findings in national scientific journals in Spanish.

While research plans and projects in Mexico target recurring health priority problems, their results do not reach the decision makers responsible for addressing these problems. The main reason for this is the lack of communication among the researchers, the decision makers and the vulnerable groups at the heart of these programs. In other words, research conducted in Mexico does not always respond to the real needs of the most vulnerable populations, and public policy decisions are seldom based on scientific evidence produced by national researchers in academic environments.

Finally, the culture of evaluating programs and policies in Mexico is relatively recent, and evaluations are not performed consistently. Therefore, the impact of research findings on
public policy remains unknown. It is essential to strengthen the linkage between academia and public policy through inclusive partnerships with clear and defined objectives and an open line of communication between the two parties.

**Recommendations**

First, we will expose some of the principal challenges confronted by SDH-related research. Of greatest importance is the need for finding ways both to link SDH-related research results with improvements in health policies and practices, and to integrate health with overall science and technology. Also important is the achievement of more active participation, and the strengthening of SDH-related research capacities in the academic institutions, across the 32 states of the Mexican Republic, given that resources (financial, human and material) tend to concentrate in the institutions located in the central part of the country, mainly Mexico City. This concentration places the work of provincial researchers at a clear disadvantage in terms of funding, resources, and inter-institutional dissemination and collaboration.

If social - specifically SDH - research for health is to exert an impact on national health policies and programs, communication between academic institutions in Mexico City and the province must improve. Only then will it be possible to attain an inclusive synergy able to respond equitably to the genuine national health needs, without concentrating resources either in the capital or in the states with the highest level of academic resources and infrastructure. For instance, during the study, we were unable to find SDH-related works published by universities or academic centers in states such as Guerrero, Oaxaca, Hidalgo, Campeche, Chihuahua and Quintana Roo.

Additionally, a permanent link must be established between researchers and decision makers, all the actors must be sensitized to SDH-related issues, and research results must be translated into implementing public policies that benefit the population.

It is crucial to engage decision makers, government agencies and civil society – a potential user of research results – throughout the entire research process, from project design to the translation of results. Additionally, studies should pose replicable proposals that are cost effective and responsive to real conditions, based on what it is actually feasible to accomplish. Furthermore, it should be possible to demonstrate that the projects are truly aimed at finding solutions to social problems (i.e. housing and sanitation). And, again, in order to magnify the impact of research, it is important to work with civil society - that is, to obtain support from the community - throughout the research process.

It is also recommended that the National Health Research System encourage both institutions and researchers to publish SDH-related research results in national journals, by offering financial incentives and compensation rates similar to those earned by publishing works in international high-impact journals. The objective of these incentives is to achieve a more rapid and efficient dissemination of knowledge within the national context and aimed at national stakeholders.
In addition, it is important to develop a brief, essential guide to understanding SDH. Its distribution among community leaders, managers, decision makers, politicians, high school students and the overall population would advance a humanistic vision based on social justice and equity in health. The guide should be circulated widely across all sectors, not only within the health arena.

Researchers should be provided with training on how to manage and share their findings. For instance, knowing how to position their results on the national public policy agenda is an essential research skill. During basic training, researchers should be taught how to develop clear and precise strategies for delivering their findings to key players in an unambiguous, simple manner. Scientific journalism is also a necessary competence for researchers to communicate with a non-specialized public.

It is crucial to count on the political will of key players from the research system, particularly the health research system. This facilitates the procurement of resources and draws official support, not only for disseminating, but also for applying results in terms of actions and strategies that improve the health of the population.

Awarding incentives for SDH-related research is yet another aspect that must be strengthened among academic institutions in Mexico. For instance, incentive programs could be put into place for researchers who conduct SDH-related research, publish their findings in national research journals, and translate their findings into brief, concise executive summaries for decision makers.

Other recommendations refer to interdisciplinary work as a way of connecting with researchers from other fields, such as demography, anthropology, psychology and sociology. It is also advisable to revise several CONACYT policies such that more attention is paid to researcher training and updating opportunities. Parallel to scientific productivity, recognition and awards should be conferred to researchers who achieve professional growth through the acquisition of new skills and personal training in current issues such as SDH. However, this requires political will and a markedly higher budget.

With respect to SDH-related systematic reviews, it is important to develop standards in SDH descriptions, such that the terms used can be consulted in the thesaurus and the established MeSH terminology. The term, Social Determinants of Health, is not included in these dictionaries, thus hindering the identification of relevant SDH-related material.

To conclude, this report demonstrates that capacities for SDH-related research do exist in Mexico. They have existed for some time, and continue to actively evolve today. However, the almost total lack of articulation, organization and space for debate on this theme is disturbing. There is also a need for systematizing the local dissemination of information on SDH-related research. Each one of the institutions mentioned here has its own particular line of research, priorities and goals. Therefore, it is important to create a national agency, for instance, a “National SDH Observatory,” with the following functions: (1) to systematize and maintain an updated SDH-related research database in Mexico; (2) to gather researchers, decision makers and civil society regularly to discuss research findings and their implications for public and social policy; (3) to articulate and link researchers
from diverse institutions to collaborate on SDH-related research projects; (4) to disseminate information of interest about SDH through a periodic disseminating agency; and (5) to assess the impact of SDH-related research on public policy. These efforts will provide the means for keeping abreast of developments, avoiding duplication of efforts, and positioning SDH within the National Development Plan (PND) and the Health Sector Program (PROSESA). They also constitute ways of ensuring that SDH become part of the goals set under government strategies, and do not remain solely as references in their documents. SDH issues must be “leveled up” on the list of priorities of the national agenda and reach the forums where public policies are discussed and decided. Only through these mechanisms can SDH be properly showcased and, consequently, equity truly promoted in all forms in Mexico.
Summary

Two Challenges

- SDH in and of itself is not positioned as a priority in the 2007-2012 National Specific Action Program of Health Research (PAEIPS) nor in the Health Sector Program (PROSESA).
- The translation of research findings, and the monitoring, and evaluation of policy impact is not consistent in Mexico, which hinders the utilization of findings for developing social policy and programs aimed at improving the quality of life of all Mexicans.

Two Recommendations

- Create a “National SDH Observatory,” with the following functions: (1) to systematize and maintain an updated SDH-related research database in Mexico; (2) to gather researchers, decision makers and civil society regularly to discuss research findings and their implications for public and social policy; (3) to articulate and link researchers from diverse institutions to collaborate on SDH-related research projects; (4) to disseminate information of interest about SDH through a periodic disseminating agency; and (5) to assess the impact of SDH-related research on public policy.
- Increase government investment on health research, particularly on SDH, make available more funds, and an increase of funding agencies for this purpose.

Two opportunities

- In Mexico, there is an existing base of SDH-related research capacities that is in constant growth, and it is supported through strategies that encourage the professionalization of the researcher’s career (National System of Researchers, fellowships, grants, and other opportunities offered by National Council for Science and Technology (CONACYT), and the Education and Health Sectors).
- Mexico has a consolidated Health Sector Program (PROSESA) and a National Specific Strategic Action Plan for Health Research (PAEIPS). The following sectors participate in decision making and implementation of such programs: government (federal, state, and local); business/corporations; and academic.

Two challenges found in the elaboration of this report

- The CONACYT platform (SIICYT) with data on health research, funding, stakeholders and institutions is not updated on a regular basis, and does not meet the objectives stipulated therein.
- SDH-related studies have not been disaggregated as a distinct research theme; therefore, SDH does not exist as an index term (MeSH) for international health search engines such as PubMed. Thus, proxies had to be used for the identification of SDH research.
References