

# Global Burden of Disease for Older Persons in Mexico and USA, 1990-2013

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International Workshop on

FORMAL AND INFORMAL SYSTEMS OF SUPPORT FOR OLDER PERSONS

IN MEXICO AND THE UNITED STATES, IN THE CONTEXT OF HEALTH AND WELFARE REFORM

> September 17-18, 2015 Mexico City







# Outline

- Demographic and Epidemiological Transition
- GBD 2013
  - Better methods + more data = Sound results
- The BoD in older persons
- Implication for Health Systems





# **Demographic Changes**



Deaths Age Structure Mexico and USA 2015 and 2030



Source: UN. World Population Prospects: The 2015 Revision.

**Mexico** 

### **Increasing the Age of death**



Source: UN. World Population Prospects: The 2015 Revision.



USA



■ < 5y ■ 5-49y ■ 50-69y ■ 70+y

### **Important Progress in Health**



#### The Lancet Commissions

THE LANCET GLOBAL S HEALTH

@ Global health 2035: a world converging within a generation

Dean T Jamison\*, Lawrence H Summers\*, George Alleyne, Kenneth J Arrow, Seth Berkley, Agnes Binagwaho, Flavia Bustreo, David Evans, Richard G A Feachem, Julio Frenk, Gargee Ghosh, Sue J Goldie, Yan Guo, Sanjeev Gupta, Richard Horton, Margaret E Kruk, Adel Mahmoud, Linah K. Mohohlo, Mthuli Naube, Arid Pablos-Mendez, K.Srinath Reddy, Helen Saxenian, Agnes Soucat, Karen HUlltveit-Moe, Gavin Yamey

#### Lancet 2013; 382: 1898-955 Executive summary

Published Online Prompted by the 20th anniversary of the 1993 World our lifetimes December 3 2013 Development Report, a Lancet Commission revisited the A unique characteristic of our generation is that colhttp://dx.doi.org/10.1016/ 50140-6736(13)62105-4 This online publication has been corrected. The corrected version first appeared at accompanied by opportunities for action by national 2035, to achieve a "grand convergence" in health. With thelancer.com on Jan 17, 2014 governments of low-income and middle-income coun- enhanced investments to scale up health technologies See Comment pages 1859, tries and by the international community. 1861, e33, e34, e36, and e38

#### \*Denotes co-first authors There is an enormous payoff from investing in health

See Online for video infographic Department of Global Health, Iniversity of Washington Searcle, WA, USA (Prof D T Jamison PhD): Harvard accounts. University, Cambridge, MA,

USA (Prof L H Summers PhD); Harvard School of Public Health, Harvard University productivity, they fail to capture the value of better investment highly attractive. Cambridge, MA, USA health in and of itself. This intrinsic value, the value of (Prof | Frenk MD. Prof S | Goldie MD); University additional life-years (VLYs), can be inferred from of the West Indies, Kingston, people's willingness to trade off income, pleasure, or . The expected economic growth of low-income and Jamaica (Prof & Alleyne MD)convenience for an increase in their life expectancy. A Department of Economics and more complete picture of the value of health Center for Health Policy. Stanford University, Stanford, investments over a time period is given by the growth CA, USA (Prof K JA mow PhD); in a country's "full income"-the income growth Executive Office, GAVIAIllance, measured in national income accounts plus the VLYs Geneva Switzerland (SBerkley MD); Ministry of gained in that period. Between 2000 and 2011, about Health, Kigal, Rwanda 24% of the growth in full income in low-income and (A BinatwahoMD (PedT)middle-income countries resulted from VLYs gained. Family, Women's, and This more comprehensive understanding of the eco-Children's Health nomic value of health improvements provides a strong (F Bustreo MD) and Department

of Health Systems Financing rationale for improved resource allocation across sectors. (D Evans PhD), World Health Organization, Geneva, Opportunities: Switzerland: Global Health

- If planning ministries used full income approaches (assessing VLYs) in guiding their investments, they could increase overall returns by increasing their domestic financing of high-priority health and healthrelated investments.
- Assessment of VLYs strengthens the case for allocating a higher proportion of official development assistance The burden of deaths from non-communicable diseases to development assistance for health.

#### A "grand convergence" in health is achievable within

case for investment in health and developed a new lectively we have the financial and the ever-improving investment framework to achieve dramatic health gains technical capacity to reduce infectious, child, and by 2035. Our report has four key messages, each maternal mortality rates to low levels universally by and systems, these rates in most low-income and middle-income countries would fall to those presently seen in the best-performing middle-income countries. The returns on investing in health are impressive. Achievement of convergence would prevent about Reductions in mortality account for about 11% of recent 10 million deaths in 2035 across low-income and lowereconomic growth in low-income and middle-income middle-income countries relative to a scenario of countries as measured in their national income stagnant investments and no improvements in technology. With use of VLYs to estimate the economic However, although these accounts capture the benefits, over the period 2015-35 these benefits would benefits that result from improved economic exceed costs by a factor of about 9-20, making the

#### Opportunities:

middle-income countries means that most of the incremental costs of achieving convergence could be covered from domestic sources, although some countries will continue to need external assistance.

The international community can best support convergence by funding the development and delivery of new health technologies and curbing antibiotic resistance. International funding for health research and development targeted at diseases that disproportionately affect low-income and middle-income countries should be doubled from current amounts (US\$3 billion/year) to \$6 billion per year by 2020. The core functions of global health, especially the provision of global public goods and management of externalities, have been neglected in the last 20 years and should regain prominence.

#### Fiscal policies are a powerful and underused lever for curbing of non-communicable diseases and injuries

(NCDs) and injuries in low-income and middle-income

Group, University of California,

(Prof R G A Feachern DSc [Med]

GYamey MD): Development

(G Ghosh MSc); Health Science

Center Peking University

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Washington, DC, USA

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### Life expectancy decomposition by causes Mexico and USA 1990-2003



GBD 2013, released 12/2014

### Life expectancy decomposition by causes USA 1990-2013



### Life expectancy decomposition by causes Mexico, 1990-2013









# Outline

- Demographic and Epidemiological Transition
- GBD 2013
  - Better methods + more data = Sound results
- Implications for older persons
- Implication for Health Systems



### **GBD 2013**

First revision GBD 2013 to be released during 2014 and 2015.

GBD 2013 will incorporate critical feedback on the GBD 2010 estimates and many new datasets proposed by disease, injury and country experts.

GBD 2013 will include subnational assessments for the UK, China and Mexico

#### GBD 2.0: a continuously updated global resource

of the state of the world's health from 1990 to 2010.17 younger than 5 years decreased substantially and different risk factors. maternal mortality also fell; since 2005, major progress has been made for HIV, and for malaria since 2004. probably lead local analysts to identify data sources that Despite this progress, GBD 2010 also shines a spotlight have not been used and could strengthen the analysis on the challenges that many of the poorest countries for a specific country. For example, collaborative work continue to face, where several infectious diseases, such with the University of Zambia and the Ministry of Health as diarrhoea, pneumonia, and neonatal conditions, con- of Zambia on district-level health outcomes was able to tinue to dominate as major causes of premature child death. Substantial investments by developing countries assessments of child health.<sup>10</sup> and US\$28-1 billion in 2012 in development assistance for health, focusing on the Millennium Development and future iterations of GBD will probably suggest Countries are experiencing a complex set of changes in health problems and their underlying causes, which need more and more contextualised policy responses.

For several reasons, national, regional, and global actors need to have access to the best available evidence for patterns of health and how they are changing. Although it is an enormous resource, GBD 2010 needs to be regularly and systematically revised and improved to reflect new evidence and new methods as they accumulate for at least five reasons. First, new data sources for a country-eg, a Demographic and Health Survey, a census, a local survey, or national vital registration data-can substantially change understanding of health trends. Demographic and Health Surveys in several sub-Saharan African countries have shown accelerated decreases in child mortality in the past decade.79 Trends in mortality can change abruptly: from 2008 to 2010, adult male mortality in Ukraine dropped about 22%; and scale-up

The Global Burden of Disease Study 2010 (GBD 2010) antiretroviral therapy (ART) has radically reduced adult Publiced Online provides a comprehensive and coherent assessment mortality since 2005 in several countries (eg, Botswana). http://doi.org/10.3016 Second, multicentre studies, such as the Global Enterics 50140-6736(13)60225-1 With consistent definitions, standardised approaches Multi-Center Study® or Pneumonia Etiology Research to data quality, and consistent modelling strategies, for Child Health Study," will provide much-needed high-GBD 2010 assesses mortality, premature mortality, and quality information about the aetiology of diarrhoea and disability caused by a detailed list of diseases, injuries, pneumonia. Additionally, proposed studies of the risks and risk factors. The analysis is undertaken in great of death associated with malaria parasitaemia in adults detail, covering 187 countries, two decades, both sexes, would potentially change understanding of malaria and 20 age groups. The findings point to rapid changes mortality when completed. Multicentre investigations in patterns of health outside sub-Saharan Africa, with will probably change detailed understanding of disease large shifts in many regions towards non-communicable patterns. Burden estimates should be guickly revised diseases, chronic disability, and risk factors related to to reflect this type of new knowledge. New studies will behaviours. In sub-Saharan Africa, mortality of children also affect understanding of the hazards associated with

> Third, expanded use of the GBD 2010 results will make use of many data sources not used in international

Fourth, careful reflection on the GBD 2010 results Goals, are contributing to accelerated transitions.<sup>8</sup> alternative interpretations of the biases and necessary corrections in many data sources. This type of assessment is iterative and benefits from repeated assessments. The development of the UNAIDS



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### Key Aspects of GBD 2013

- 1) Expanding the collaborative network in addition to strengthening expert input in key disease, injury and risk factor areas, major emphasis on developing collaborators in each country. Currently, more than 1000 local collaborators located in more than 105 countries.
- 2) Re-engineering of the code for GBD 2010 improved computational efficiency, standardization across all analyses, automated archiving, linkage of data to the GHDx, allowing for sub-national estimation within the overall framework.
- 3) Improved estimation tools DisMod-MR 1.0 extensively used for GBD 2010. Version 2.0 is a major improvement – 100 times faster, more analyst control of modeling options, new visual interface, consistent posterior estimation for each country.





Key Aspects of GBD 2013 (2)

- 4) Documenting sources used for GBD 2010 many expert groups provided data input sheets with missing source documentation. Major effort to trace back sources and document them in the GHDx.
- 5) Incorporating new studies and data -- Extending systematic reviews to 2013, adding new survey data sources, incorporating sources provided by new collaborators, major addition of more recent cancer registry data.
- 6) Changes in estimation methods for diarrhea etiologies and pneumonia etiologies.
- 7) Enhanced transparency of source data for each input -- source metadata would be available for each outcome in GBD 2013 visualization tools consistent with data access policy.

### **GBD 2013 results published**

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making Dravalance and Cigaratte Concumptio				
moking Prevalence and Cigarette Consumption	JI	2 P		
187 Countries, 1980-2012				
ne Ng, PhD, Michael K. Freeman, MPH: Thomas D. Fleming, BS; Margaret Robinson, BA;		@ in [1] Global, regional, and national prevalence of overweight	Global, regional, and national levels of neonatal, infant, and 🛛 🛞 🍡 🖲	Global, regional, and national levels and causes of maternal 🛛 🖗 🍾
ara Dwyer-Lindgren, MPH, Blake Thomson, BA, Alexandra Wolfurn, BA, Ella Sarman, BS, Sarah Walf, MPH, n.D. Jonez, PhD. Christopher L1, Maximum MD, Offisii Eremana jela Galaxies, JBD		and obesity in children and adults during 1980–2013:	under-5 mortality during 1990-2013; a systematic analysis	mortality during 1990-2013; a systematic analysis for the
no. oper, mile consequent a consequence print conservation, mile		a sustanastis analysis fastha Clabel Durden of Disease	for the Clobel Durden of Disease Chudu 2012	Clabel Burden of Disease Chudu 2012
	The Interactive at jama.com	a systematic analysis for the Global Burden of Disease	for the Global Burden of Disease Study 2013	Global Burden of Disease Study 2013
MPORTANCE: IDDACCO is a Reading global blease that factor. Understanding habonal trends in prevalence and consumption is critical for prioritizing action and evaluating tobacco control proteines.	Supplemental content at jerna.com	Study 2013	Haiding Wong", Cheles A. Liddel, Matthew M Cootes, Maghan D Mooney, Cohy ELinitz, Austin E Schurnzher, Henry Juffel, Montou lannonne, Byan Philips, Katherine T Lefyner, Legion Sandar, Rob Dannington, Norladinose, Troy A Jacobs, Xiaeferg Liang, Maiging Zhou, Jun Zhu, Ganghuan Yang, Narping Wang, Saiwat Lu, Yishang Li,	Nicheles / Kasubaum <sup>1</sup> , Annlik Bertaus-Wille, Megan S (oggestell, Kopu A Shackeljind, Cablyo Stainer, Kylel Hinaton, Diego Goranian Medina, Ryan Barber, C Daniel Dicker, Tana Tempile, Timathy Millolock, Aper Abbasagle Organent, Faad Abid-Abid-N, Semana Fenele Abent, Tana Abduit, Adenada Adekiant, Zanfin
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OBJECTIVE To estimate the prevalence of daily smoking by age and sex and the number of		Refuel Alforno", Mohammed K AV", Raghib AP", Nelson Alvis Guzman", Wald Ammar", Palweshe Ameni", Amitava Banejer",	Majed Massed Assett, Rese Assettl, Amteura Banegort, Sanjay Baset, Neerg Bellt, Toleso Biolet, Michelle L Bell, Zalfgor Bhattat, Jed Blant, Berek Boss Basetat,	Azmenau T Amuret, Hasson Amiril, Walid Ammart, Carl & T Antonio1, Palwasha Amuratt, Johan Amirikot, Valentina S Anic Amenjenict, Ali Artamant, Maja
ogarettes per smoker per day for 187 countries from 1980 to 2012.		Simon Barquera", Sanjay Basu", Denick A Bennett", Zulfgar Bhutta", Jed Blant", Norberts Cabral", Ismael Compos Nonato", Jung-Chen Chang",	Southaire Box (fourt, Nicholas Bestlonder), Nigel G. Boxort, Linit Niger, Built, Jonathaire R. Carapertinit, Resario Cardenaest, Econid O Carpentenit, Valenia Casul, Auben Esta value Casult,	Rano J Aughart, Reso Assadit, Lydio S Adies I, Alao Badawit, Kalpano Bialainshnant, Asindam Basut, Sanjey Basut, Justin Beardwleyt, Newaj Bedit, Tolena B
DESIGN Nationally representative sources that measured tobacco use (n = 2102		Rape Uneventey'', Karen J Courvier', Incoart H Ungur', Jonia K Canagr', Kaustion C Distributer', Laint Denante'', Karen Joavie'', Ariand Dapania'', Samath D Dharmanithe'', Eric L Divig'', Adnan M Dumare'', Alexa Estephanisti'', Fanhad Fanadfar'', Devik F J Fay'',	Percencatas-Lapert, Alexencument, Xuon Cherr, Peggerte-Cher Charryt, Rajer Chevalharyt, Catas A Climitaphrit, Imp. Wy Charryt, Massene Cellist, Nen de Catas Lefer, Komi I Counsillet, Laik Dandanat, Rakhi Dandonat, Advan Dosint, Annad Davamat, Rehele Derbet, Samath D Ohormastort, Makehi K Dhemsit, Udur Dimert, Esici Dingt,	Michelle L Bell', Eduardo ternatori, Fantu J Beyenet, Califord Bhattal, Ang ten Absahlait, Jeo Banet, Bena Basasti, Carlos A Castarledo Oraxelet, Roben Estanisla Castrol. Fendin Catali-Láoezt. Alonar Casilint, Jano Chen Changt, Xuan Chef, Castas A C
country-years of data) were systematically identified. Survey data that did not report daily		Valery L Feigin", Abraham Flasmon", Maharamad H Forevounfar", Atsushi Gota", Mark A Green", Rajere Gopta", Nima Hafezi-Nejod",	Koom M Edmondt, Sergel Petrovich Ernoliset, Fershal Farculfurt, Seyed Alsbammad Fereitschwejedt, Duniel Obsdaw Fijdelt, Natuliye Feight, Maharmad H Fereizenfart,	Sumert S Chught, Massimo Chillet, Samantha M Calquhount, Ledie Trimball Coopert, Cyrus Coopert, Iuri da Casta Leitert, Lalit Dandonat, Rubhi Dandonat
cobacco smoking were adjusted using the average relationship between otherent definitions. App-sev-country-year observations (n = 38 315) were synthesized using spatial-temporal		Groome J Hankey", Heather C Hanneven R. Rosma Hannaeller, "Saman Hay", Lucia Hernander", Abdullatif Honevin, "Bullet T Mixiev",	Ana C Garcia Ljohanna M Gelojmert, Bradjord D Gessnert, Betevan Goginashvillt, Philinen Gonart, Acauchi Gato L Hele N Goudart, Mark A Georet, Kaven Fem Greenwellt,	Anand Dayamat, Louise Degenbardth, Diego De Lent, Bolja del Pazo-Cruzt, Robede Denbett, Muluken Dessalegnt, Gobrielle A deVebert, Sarrath D Dharman
gaussian process regression to model prevalence estimates by age, sex, country, and year.		Shares Eldin Ali Hissaen Uhaldia", Andre Pissael Tempre", Young Saleh Khadon", Young Ho Uhang ", Daniel Tim", Ruth W Einsleich",	Domin GHoyt, Build T lidnort, Fahar Islamit, Somoya Ismoolowet, Weekmand Hart, Gohang Janet, Let B Jonest, Knod Juelt, Edmond Kato Robeger Bett, Dhow Sitzert,	Sevel-Mahammad Forshtelmeiath, Graze Mario Foreira de Limat, Mahammad H Foreixandert, Elkabeth B Francot, June Gaffieint, Ketevon Gambachel
Data on consumption of cigarettes were used to generate estimates of cigarettes per smoker		Jonas M Kinge", Yashihiro Kokobo", Soewarta Kosen", Gene Kiwan", Taavi Lai", Mull Leinsalu", Yichong Li", Xicofeng Lieng", Shiwei Liu",	AnderPress Kreynet, Maio Konsolidert, Yaovef Soleh Khadert, Shorro Clain All Hasson Khalifet, Young Ho Khangt, Daniel Kimt, Yohannen Kiefut, Jonas M Kinget,	Fortune Ghitoko Gaskpet, Ana C Garciat, Johanna III Gelejmet, Katharine II Ghneyt, Maurice Ginuelt, Ukabeth L Gasert, Ketevan Gaginashvilli, Philimor
per day.		Giancado Logrescino", Padio A Lottefo", Yuan Lu", Jixiang Ma", Nana Kawiu Mainoo", George A Mensah', Tonyii Meniman", Akiri Mokdad", Journa Minechambera", Maham Nankaral", Alian Nickeell", Davian Kamil V. (Milindor Norman", Erim Laich Yahnan, Monton I, Machanara",	Yoshihin Kolubet, Sevents Raamt, Bathdeny Kuste Diglot, GAnil Kamat, Kauhalendo Kamat, Rai Ki Kamat, Kauki aki, Qing Lant, Anders Lensont, Jong Fac Lant, Melli sinoket, Stadus V. Set, Staam Usebeltet, Kamada Lannelinet, Rocket Linket, Britanaka Lannelinet, Brown Lethoust and Stadus Mellekhett	Dinomb Gonziller Cestellt, Atsuchi Gotet, Hebe N Goudert, Hankit Chander Gugnerith, Rahed Guptert, Rajere Guptert, Nime Haferi Highett, Rondeh Ribbi Ha Manhamed Mannensen M. Zummer Manhart Hildert Highett Roman Mannenflert. Steam Mines & Manne Mines & Mines & Mines
MAIN OUTCOMES AND MEASURES Modeled age-standardized prevalence of daily tobacco		Mishammad Imman Ninar", Takayoshi Obludo", Samuel O.OU", Andera Pedasza", Dereinaj Prabhakaran ", Nobhajit Rey", Likhechukwu Serepson",	Webie Bonientos Marzent, Mahammad Taufiq Mashalt, Tauaro 7 Mazondorf, John J McGratht, Ziad A Mansisht, Walter Mendauat, George A Menacht, Atte Merotojat,	Abdullatij Hussenit, Bulat Tikisovt, Kaie levort, Manare levert, Kathryn Hjacaburt, Einan Jahangirt, Sun Ho Jert, Paul N Jensent, Weekanand Jhat, G
moking by age, sex, country, and year; cigarettes per smoker per day by country and year.		Hyepprong See", Sochof & Separateur', Yangi Shibayat', Animan Shiri', Ay Sikur', Gittinjak M.Singh', Janvinder A.Singh', Urgani Skibeik',	Ted & Willert, Edward J Willst, Kazan Abdulmuhan Mohammadt, Ali H Makdadt, Lawnan Menastat, Maralla Monticat, Ami & Mooret, Joanna Maschandinast,	Knud Juell, Edmand Kato Kabagambel, Haidong Kant, Nadim E Karomt, André Katcht, Corine Kakis Koremott, And Kault, Norito Kowakamit, Konstortin K
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opulation older than 15 years decreased from 41.2% (95% uncertainty interval [UI],		Theo Vers", Chaire Wang*, KaoRong Wang*, Eksabete Weiderposs*, Andrea Weiderker*, Januther I. Weight*, Y Chaire Yong*, Hiroshi Yatsaya*,	Dansing Problemannt, Segind SR Rahmunt, Schern M.Runst, Robert Quertin Rollyt, David Rojes-Austart, Loss Renfault, Renfault, Loss Renfault, Renfault, Loss R	Gene Toront, Taxoi Loit, Ratiki Lafoot, Hilton Lamit, Van C Lansinght, Anders Lansont, Jong-TaxLeet, Jennes Leight, Mall Leinsahut, Richy Leungt, Xioohon
40.0%-42.6%) in 1980 to 31.1% (95% UI, 30.2%-32.0%; P < .001) in 2012 for men and from		Jihyun Yoon*, Seok-Jun Yoon*, Yong Zhao*, Maigeng Zhou*, Shankuan Zhu*, Alan D Lapezt, Christopher JL Mumsy1, Emmanuela Gakidou14	Janhas Salamant, Uchechulawa Sampsont, Ruman S Santast, Manika Sawlineyr, Janger C Schmidt, Manna Shakh-Rissanneet, Jun Shet, Sans Shekhbahant, Kanji Shekayat, Manika Mani Tani Kanakhi Mahamit ku Manaka Jane Pana Galambitid, Janeida A Galak Manadi Mahalik Kana Galakhi Ma	Yongmei Lit, Juan Liangt, Xiaofeng Liangt, Stephen S Limit, Heien-He Linit, Steven E Lipshukzit, Shiwei Livit, Balinda K Lipsdit, Stephenie J London The Mark Table Mark Stephenie J Linit, Heimer He Linit, Steven E Lipshukzit, Shiwei Livit, Balinda K Lipsdit, Stephenie J London
10.6% (95% UI, 10.2%-11.1%) to 6.2% (95% UI, 6.0%-6.4%; P < .001) for women. Global		Summary	Headed Hyper Samily, Lawkee Simeners, Ang Selver, High Lond Siggeolacter, Johannar A Singhr, Hegara Samberr, Admiter Sakar, Singhr S Sommer H, Ladarde Soleman Techavit, Alam (Theman), Walkin Kalilop Stathopeulout, Kanstantinos Stroumpaulist, Kaum II Table, Raberto Tubis Talanguer, Causine Maria Talande, Aladarde Soleman Techavit, Alam (Theman),	Johang Wall, Stephi Wall, Vasia Narisel Petri Machadol, Nario Ludau Marcoli, Walle Magdalli, Uniscipier Undera Napier Nariolieri, Mehin Barkentas Maszent, Amarda J Mason-Jonest, Man Mahan Mehindiastat, Fabala Meja-Radrigaert, Ziad A Meniaht, Walter Mendecet, Tad R Milla
decline, 1.7%; 95% UI, 1.5%-1.9%) compared with the subsequent period (mean annualized		Lawert 3314, 254, 256-81. Background In 2010, overweight and obesity were estimated to cause 3 - 4 million deaths, 3 - 9% of years of life lost, and	Andere L Thorne-Lymont, Hideski Toyoshimut, Zachanie Trala Dienbuenet, Parfait Uwaleayet, Selen Begin Uzunt, Tammi J Vesaniant, Ana Maria Nogales Vasconadost,	Ab H Mokidodt, Glen Liddel Molet, Lenenzo Monantat, Jonethan de la Cruz Monist, Julio Cesar Montañez Hernandez t, Amili Mooret, Rietzro Mont, Ubicht
rate of decline, 0.9%; 95% UI, 0.5%-1.3%; P = .003). Despite the decline in modeled		Nambed (wine 3-5%) of disability-adjusted interperts (DALIS) wordwords. The rise in obesity has led to widespread cans for regular Wey2, 3244 monitories in overweight and obesity nervalence in all normalitions. Commarishe unit-cade information	Vasily Victorevich Vicesory, Sam Emil Vehett, Theo Vest, Sophen Walert, Xu Wart, Soot Weichenhalt, Elsabeth Weiderpast, Rabet & Weitzauht, Roney Westermant, Januar 2008 Januard, Williamed, Vaser, Coast, Column Lader, And Wart, And Washar, Vaserseint, Mandel, Washin, Chandra, Hat, Kert	Mituru Mukaigawanat, Akya Naheelli, Kavin S Nankari, Denina Nandi, Vinay Nenguri, Denin Nashi, Chalidi Ningkrit, Robert G Nehenri, Saskan Protod Ning Charles @ Nanchard: Markelant: Markel Ninessenholisest: Michemenel Inners Ninest: Sender Mederl. Old Ninkerinet Laderbackenholdert. In House Ohl Tali
prevalence, the number of daily smokers increased from 721 million (95% UL 700 million-742		struct/docksrupt21000/ about levels and trends is essential to quantify population health effects and to prompt decision makers to prioritise	Neyson II Soyel July 1, Markum Zhat, Alan D Lopet, Onitophe JL Murroyt.	Roligoko O Okuranyat, Sozal B Genert, John Nelson Opiet, Orish Ebere Orisakuert, Jeyamj D Pondiant, Christian Papochristaut, Joe-Hyun Parkt, Angel J Pater
milion) in 1980 to 967 million (95% UL 944 milion-989 milion; P < .001) in 2012. Modeled revealence rates exhibited substantial variation armss age, sev, and rountries, with rates		Ser Datas Correct action. We estimate the global, regional, and national prevalence of overweight and obesity in children and adults.		Scott & Patternt, Vined K Pault, Bans Igor Peelint, Neil Peacet, David M Peerint, Konnal Peudonst, Max Petraidit, Dav Poenarut, Gallienne Y Pokerzykt,
below 5% for women in some African countries to more than 55% for men in Timor-Leste and		http://dx.doi.org/10.100/_001110g_1960m_0013. State/States/States/States	Summary Recommend Remarkable financial and political efforts have been focused on the reduction of child mortality during	Den Papel, Fanhal Pournalek/, Dima Qubol, D Alex Quosthing/, Anwar Rabyl, Kazem Rahmil, Vola Rohm-Movayhart, Sagad ur Rahmant, Managesan Galaem M Resett Amazo Rohant Laon Ranfanit Rohhodt Rout Tania Geomine Glocker Poviaetert Mohammad AB Schmint Johanna Galomont Licherh
Indonesia. The number of cigarettes per smoker per day also varied widely across countries		Transfer publication has Methods We systematically identified surveys, reports, and published studies (n=1769) that included data for height and	the past few decades. Timely measurements of levels and trends in under-5 mortality are important to assess progress Wet.ms	Ramar S Santon I, Movika Saukneyrl, Felix Sayinzogarl, Kone JC Schneidert, Austin Schumachert, David C Schwebelt, Sanya Senket I, Sadaf G Sepanlout, Ed
and was not correlated with modeled prevalence.		been carected the convent weight, both through physical measurements and self-reports. We used mixed effects linear regression to correct for write frequencies there are addressed to be obtained data for necessary of about your descenses that he near necessary and your (and you're addressed to be addresse addressed to be addressed t	towards the Millennium Development Gual 4 (MDG 4) target of reduction of child mortality by two thirds structure of the struc	Marina Shakh-Nazarovat, Sara Shekhbahant, Kenji Shbuyat, Harashin Hyan Shint, hy Shiort, Inga Dora Sigliadottiri, Donald H Silberbergt, Andrea P Si
CONCLUSIONS AND RELEVANCE. Since 1980, large reductions in the estimated prevalence of		thelasurcase on Jug 29, 2014 with a spatiotemporal Gaussian process regression model to estimate prevalence with 95% uncertainty intervals (UIs).	from 1990 to 2013, and to sperify models or success. 'Comparing action	pesinter A Singert, vegere skinetect, kalen sinkelt, sengry S sennakovr, Lacono A speciality, Chantersheemar i Seneratementy, Konstantinos senormpou Bryen L Selevit, Kann M. Tablit, Roberto Tithia Talanquist, Feng Tant, Carolina Maria Taiwinzt, Eric Yebaah Tenkorangt, Ahdadch Salieman Terkowit, Andre
daily smoking were observed at the global level for both men and women, but because of		Not wire advant. Hardware Wheeldwide the accountion of adults with a back more lader (BBD) of Wheter termines increased between	Methods We generated updated estimates of child mortality in early neonatal (age 0-6 days), late neonatal (7-28 days), https://www.incometa.action.	Devid L Tirschwellt, Jeffrey A Towbint, Bach X Trant, Mibiada Talimberist, Uche S Uchendu t, Kingsley N Ulwagist, Edwards A Undurragat, Selen Regim Uto
sopulation growth, the number of smokers increased significantly. As tobacco remains a been to the backh of the world's non-duting interestified effects to control its use here needed.	Author Affiliations: Institute for	Korepaning arbitrary Workswhole, the projection of a assars with a dough-mass mace (total) of 25 agrin-or greater increases between Korepaning arbitrary 1980 and 2013 from 28-38 (95% UL 23-4-29-3) to 36-9% (36-1-37-4) in men. and from 29-5% (29-3-3-0)-21 to	postneonatal (29-364 days), childhood (1-4 years), and under5 (0-4 years) age groups for 133 countries from 1970 to 2013 with more than 20/00 unnex concert with molectrizing and counde positivities detracted. We	Andrey J Valletyt, Com Hisen Goolt, Tommi J Vasaniant, Monica S Varialist, N Venketzsebramaniant, Salvador Villalpandat, Frenorica S Wolantet, Vasiliy Theolitet, Caroline Welfart, Lindow Weiset, Lindow Weiset, Champ Vasiline Weiset, Vasiliy Caroline Weiset, Caroline Weiset, Balanter, Vasiliy
meat to the react of the worke's population, mensived end is to control is use are needed.	University of Washington, Seattle	Institute for Haddh likerics and 38-0% (37-5-38-5) in women. Prevalence has increased substantially in children and adolescents in developed	used Gaussian process regression with adjustments for bias and non-sampling error to synthesise the data for wastaums torth wastaums	Ranny Westermant, Jones D/Wikinsont, Solorion Meyeret Woldgohannent, John Q Wangt, Malumabet Abera Wordefat, Gelin Xut, Yang C Yangt, Yuichi
	(hig Freeman, Fleming Rubinson, Deservational Thomason Wolform)	Theory E. Biodeneoust, countries: 23-3% (22-5-24-7) of boys and 22-6% (21-7-23-6) of girls were overweight or obese in 2013. The	under 5 mortality for each country, and a separate model to estimate mortality for more detailed age groups. We used senapsed country,	Gokalp Radvi Venturt, Peul Hipt, Naahire Naremetett, Seok-Jun Yosent, Mustafia Z Younist, Chuambua Yut, Kim Yun Jint, Maysaa El Sayed Zakit, Yang Zhao
	Sanman, Wult, Murray, Galildou);	Chapter 87, Conding 16, prevalence or overveight and oberly and also increases in chinaren and addressents in developing countries, roun Chapter 87, Conding 16, 8-1% (7-7-8-6) to 12-9% (12-3=13-5) in 2013 for boys and from 8-4% (8-1-8-8) to 13-4% (13-0=13-9) in girls. In	explanatory mated effects regression models to assess the association between under-5 mortainly and income per remon, maternal education. HIV child death rates, secular shifts, and other factors. To manify the controllution of Classical Alishemator H,	Moiging (bourt, Jun Zhurt, Kian Nong Ziwit, Akan DiLopez R, Mateen Naghawk, Christopher J L Munrayk, Katani Lucanol
	Health, University of Melbourne,	Striptor II, Techni PD, http://www.adults, estimated prevalence of obesity exceeded 50% in men in Tonga and in women in Karwait, Kiribati, Federated	these different factors and birth numbers to the change in numbers of deaths in under-5 age groups from 1990 to arbitrary timesee the	Summary
	Melbourne, Victoria, Australia (Laner)	Allieria 96, States of Micronesia, Lubya, Qatar, Ionga, and Samoa. Sunce 2006, me increase in adult obesity in developed countries Nutrienceform has showed down.	2013, we used Shapley decomposition. We used estimated rates of change between 2000 and 2013 to construct under-5 Landards, TAcharino, and fills and a second to 2018. An estimated rates of change between 2000 and 2013 to construct under-5 Landards, TAcharino, Policity and a second	Background The 5fth Millennium Development Goal (MDG 5) established the goal of a 75% reduction in the maternal Asso
	Corresponding Author-Dristopher	A X Nordad (HD), N Naghari (HD),	Historianty faite scenarios con to 2009. Millionauda PD,	mortainy take (visite, number or maternal deams per lowow investming between 1990 and 2015, we armed as measure levels and track trends in maternal mortality, the key causes contributing to maternal death, and timing of
	J. L. Murray, MD, OPhil, Institute for Health Metrics and Evaluation.	There a the stablished health risks and substantial increases in prevalence, obesity has become a There also a stablished health chillanee. Not only is charity increasing, but no patient account of the part and the stablished health risks and substantial increases in prevalence, obesity has become a	Findings We estimated that 6-3 million (95% UI 6-0-6-6) children under5 died in 2013, a 64% reduction unaparent, stagment, stagment	maternal death with respect to delivery.
	University of Hashington, 2301 Fifth	Part Galdar Pills School at Strategy gottan meanin channenge. Not only is obesity increasing, our no national success states have been reported in mediately work with the past 33 years. Urgent global action and leadership is needed to help countries to more effectively intervene.	from 17-6 million (17-1-15-1) in 1970. In 2013, child mostality rates ranged from 152-5 per 1000 livebirths. Tworid, (130-6-177-8) in Guinea-Riscau to 2-3 (1-8-2-9) ner 1000 in Singange. The annualised rates of change. Pol(Clinea)090(ranhy	Methods We used robust statistical methods including the Cause of Death Ensemble model (CODEm) to analyze a
JAMA. 2014;311(2):83.892. doi:10.1001(jama.2013.284692	www.soe.uou.searde, WA 98021(gim @uw.adu).	University of Washington, Search VIII. UNA Stationer MCP	from 1990 to 2013 ranged from -6-8% to 0-1%. 99 of 133 countries, including 43 of 48 countries in sub-Saharan article to the state of t	database of data for 7065 site-years and estimate the number of maternal deaths from all causes in 188 countries there
		"La Supieral" Drivenity of Punding Bill & Melinda Gates Foundation.	Africa, had faster decreases in child mortality during 2004-13 than during 1996-2000. In 2013, neonatal deaths tennet in Mice accounted for 41-6% of under5 deaths compared with 37-4% in 1990. Compared with 1990, in 2013, rising numbers Port Una Mice under at the second seco	between 1990 and 2013. We estimated the number of pregnancy-related deaths caused by HIV on the basis of a systematic review of the relative risk of duing during pregnancy for HIV-positive women compared with HIV-negative
Copyright 2014 American Medical Association. All rights reserved.		NG and NA VIA Annual VA VIA		
		www.manufilton via 344 wagint ju, 2004	www.thelarust.com Published.online.Map 2, 2014. http://doi.org/10.3116/56048-6729(54)66040-9	www.thelanyzt.com Published online May 2, 2014 http://dx.doi.org/10.3016/50140-6736/14/66666-6



Global Burden of Disease Cancer Collaboration

MPORTANCE Cancer is among the leading causes of death worldwide. Current estimates o Author Audio and Video Interviews at jamaonociogy co cancer burden in indivintries and regions are necessary to inform local cancer ol strategies. Supplemental content a amaoneology.com

OBJECTIVE. To estimate mortality, incidence, years lived with disability (VLDx), years of life lost (VLLs), and disability-adjusted life-years (DALYs) for 28 cancers in 1888 countries by sex from 1990 to 2018.

lology of the Global Burden of Disease (GBD) 2013 A study use used. Cancer registries were the source for cancer incidence were distance (UBBARE (UBU), 2015 study use used. Cancer registries were the source for cancer incidence what were used to transft incidence (MI) ratios. Sources for cause of death data include vital registration system data, verbal autops studies, and other sources. The MI ratios were used to transft incidence with morth MI with environment and cancer distribution to the sources. estimated cancer deaths at each age with a calculated as the sum of YLDs and YLLs. cy: and DALYs were

TRENDS II: 2021 there ware 14 the IREIN tocket cancer case, 32 million double, and 162 hill bell DCL 3h heads concer ware the hading case to cancer tocketory. (A stafford the IREIN to ICL 3h heads concer ware the hading case to cancer tocketory. (A stafford the hading case of DCL 4h heads (A stafford and A stafford and cers combined (except nonmelanoma skin cancer and Raposi sarcoma) increased by than 10% in 113 countries and decreased by more than 10% in 12 of 188 countries.

IS AND RELEVANCE. Cancer poses a major threat to public health worldwide, an consumments new maximum, alterniz poes a major treat to public haits workshild, and incidence rates base increased in most consulties since 1000. Here treat is a particular threat to developing nations with haith systems that are ill-equipped to deal with complian and expensive cancer betweens. The annual adjudent on the Catala Water in Cancer and provide all statishtics, and patients to galde policy efforts in cancer prevention, screening, treatment, and patiention.

The Authors/Hembers of the Global Burdon of Datasate Cances Collaborations are fixed at the ort this article. Corresponding Author: Mohan Health Department, Institute for Justitute Markington, 2001 Fi Are, Ste 600, Southe, WA 9501 Unstanty of Washington, 2001 Fi Are, Ste 600, Southe, WA 9501 Unstanty and South 2001 England Queed.

C Editorial





The Millennium Declaration in 2000 brought special global attention to HIV, tuberculassis, and malaria e formulation of Millennium Development Goal (MDC) 6. The Global Burden of Disease 2013 study consistent and comprehensive approach to disease estimution for between 1999 and 2013, and an to assess whether accelerated posperso has occored unce the Millennium Declaration.



Global, regional, and national age–sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013

GBD 2013 Mortality and Causes of Death Collaborators\*

Lancet 2015; 385: 117-71

Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013

Global Burden of Disease Study 2013 Collaborators\*

Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition

GBD 2013 DALYs and HALE Collaborators\*

August 27, 2015

June 8<sup>th</sup> , 2015

Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013

GBD 2013 Risk Factors Collaborators\*

September 11<sup>th</sup>, 2015







#### Data Visualizations

#### RESULTS

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#### SEPTEMBER 15, 2015 GBD Compare Data Visualization Learn more

Analyze the world's health levels and trends from 1990 to 2013 in this revamped interactive tool. Use tree maps, maps, arrow diagrams, and other charts to compare causes and risks within a country, compare countries with regions or the world, and explore patterns and trends by country, age, and gender. Drill from a global view into specific details. Watch how disease patterns have changed over time. See which causes of death and disability are having more impact and which are waning.

#### http://www.healthdata.org/results/data-visualizations



#### SEPTEMBER 14, 2015 GBD Compare - Public Health England Data Visualization Learn more

In this version of the GBD Compare tool, explore and compare health levels and trends for England by region and deprivation level for years 1990-2013 in five-year increments. Compare how cause groups affect specific age groups in terms of death and disability. Change the deprivation level, year, metric, and sex to view results for absolute numbers, rates, and percentages. Also, see the ranking of causes or risk factors and changes between years.

# Released in September 14th 2015

### Rate of DALYs lost, both sexes, (age std) 2013



### Rate of DALYs lost, both sexes, (age std), OCDE countries 2013



# Leading Causes of Health lost, both sexes (age adj), Mexico 2013

#### Deaths

1 Ischemic heart disease
2 Diabetes
3 Chronic kidney disease
4 Cerebrovascular disease
5 COPD
6 Alzheimer disease
7 Lower respiratory infect
8 Road injuries
9 Cirrhosis alcohol
10 Interpersonal violence
11 Cimhosis hepatitis C
12 Protein-energy malnutrition
13 Lung cancer
14 Congenital anomalies
15 Hypertensive heart disease

#### YLL

1 Ischemic heart disease 2 Chronic kidney disease 3 Diabetes 4 Road injuries 5 Interpersonal violence 6 Congenital anomalies 7 Cerebrovascular disease 8 Lower respiratory infect 9 COPD 10 Cirrhosis alcohol 11 Neonatal preterm birth 12 Cirrhosis hepatitis C 13 Alzheimer disease 14 Self-harm 15 Neonatal sepsis

### 1 Low back & neck pain 2 Depressive disorders 3 Sense organ diseases 4 Diabetes 5 Skin diseases 6 Other musculoskeletal 7 Anxiety disorders 8 Iron-deficiency anemia 9 COPD 10 Oral disorders 11 Migraine 12 Osteoarthritis 13 Asthma 14 Schizophrenia 15 Chronic kidney disease

**YLD** 

NIHME

#### DALYs

1 Diabetes 2 Ischemic heart disease 3 Chronic kidney disease 4 Low back & neck pain 5 Depressive disorders 6 Road injuries 7 Congenital anomalies 8 Sense organ diseases 9 COPD 10 Interpersonal violence 11 Cerebrovascular disease 12 Lower respiratory infect 13 Other musculoskeletal 14 Skin diseases 15 Neonatal preterm birth

# Leading Causes of Health lost, both sexes (age adj), USA 2013

#### Deaths

1 Ischemic heart disease

2 Alzheimer disease

3 Lung cancer

4 Cerebrovascular disease

5 COPD

6 Lower respiratory infect

7 Diabetes

8 Colorectal cancer

9 Chronic kidney disease

10 Road injuries

11 Self-harm

12 Breast cancer

13 Pancreatic cancer

14 Other cardiovascular

15 Prostate cancer

1 Ischemic heart disease
2 Lung cancer
3 Road injuries
4 Self-harm
5 COPD
6 Cerebrovascular disease
7 Alzheimer disease
8 Drug use disorders
9 Diabetes
10 Congenital anomalies
11 Interpersonal violence
12 Colorectal cancer
13 Lower respiratory infect
14 Neonatal preterm birth
15 Breast cancer

YLL

11	Low back & neck pain
21	Depressive disorders
3 (	Other musculoskeletal
4)	Anxiety disorders
5 :	5kin diseases
6 :	Sense organ diseases
7 (	COPD
8	Diabetes
91	Iron-deficiency anemia
10	Asthma
11	Migraine
12	Oral disorders
13	Falls
14	Schizophrenia
15	Drug use disorders

**YLD** 

#### DALYs

1 Ischemic heart disease 2 Low back & neck pain 3 Depressive disorders 4 COPD 5 Lung cancer 6 Diabetes 7 Other musculoskeletal 8 Road injuries 9 Cerebrovascular disease 10 Anxiety disorders 11 Skin diseases 12 Alzheimer disease 13 Drug use disorders 14 Sense organ diseases 15 Self-harm



### Leading causes of DALYs, Mexico 2013

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Diabetes	1	1	2	2	1	1	3	2	1	1	2	1	2	1	1	1	1	1	1	2	1	1	1	1	1	2	2	1	2	1	1	2	1
Ischemic heart disease	2	3	1	1	2	2	2	1	2	2	1	3	3	2	2	3	2	4	2	1	3	3	2	2	2	1	1	3	1	5	2	1	2
Chronic kidney disease	3	2	4	4	4	3	4	3	3	3	5	2	4	3	3	2	3	3	4	3	2	2	3	4	4	7	5	2	3	2	3	3	4
Low back & neck pain	4	4	3	3	3	4	5	4	4	4	4	4	5	4	4	12	4	2	3	4	4	4	4	3	3	4	3	4	4	3	4	16	5
Depressive disorders	5	5	5	6	5	5	7	5	6	5	7	6	9	5	6	9	5	5	6	5	5	5	6	5	5	5	6	6	6	4	5	4	6
Road injuries	6	6	10	5	6	11	6	6	5	11	8	5	8	6	5	10	6	10	5	9	11	7	5	6	7	6	4	5	7	6	10	6	3
Congenital anomalies	7	8	8	8	8	10	11	10	10	7	6	9	6	7	8	5	9	9	8	6	7	6	7	9	6	10	9	7	9	8	6	8	10
Sense organ diseases	8	9	7	7	7	8	9	8	8	6	10	8	11	8	9	6	10	7	9	8	8	8	8	7	8	8	8	8	8	7	8	5	8
COPD	9	7	11	9	9	7	8	11	9	8	9	7	10	9	7	7	8	8	10	11	10	9	9	8	9	9	7	9	10	9	9	10	7
Interpersonal violence	10	25	6	17	15	17	1	7	7	12	3	14	1	18	11	8	7	6	7	7	6	17	19	12	11	3	10	17	5	21	12	41	11
Cerebrovascular disease	11	10	9	10	10	9	10	9	11	10	12	10	7	10	10	11	11	11	11	10	9	11	10	10	10	11	11	10	11	10	7	7	9
Lower respiratory infect	12	17	12	18	19	6	12	15	20	9	13	11	13	13	12	4	13	19	14	12	13	10	15	19	12	17	12	18	15	12	14	12	12
Other musculoskeletal	13	13	13	12	17	14	15	14	15	13	15	12	15	15	13	13	14	13	16	14	14	15	14	14	13	15	15	13	14	15	15	14	14
Skin diseases	14	11	14	11	12	16	14	13	13	14	14	13	16	14	14	16	15	14	12	13	16	16	12	13	14	12	14	12	12	13	16	13	13
Neonatal preterm birth	15	12	15	14	14	18	13	12	19	15	11	15	12	12	15	15	12	17	13	18	15	13	17	21	15	18	13	15	13	11	13	22	15



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### Rate of DALYs lost, both sexes, 50-69 years OCDE countries 2013



# Leading Causes of DALYS, both sexes 50-69 years old Mexico and USA 2013

#### MEXICO

1 Diabetes
2 Chronic kidney disease
3 Ischemic heart disease
4 Low back & neck pain
5 Cerebrovascular disease
6 Sense organ diseases
7 COPD
8 Cirrhosis alcohol
9 Other musculoskeletal
10 Depressive disorders
11 Cirrhosis hepatitis C
12 Road injuries
13 Osteoarthritis
14 Oral disorders
15 Lower respiratory infect

#### USA

1 Ischemic heart disease
2 Low back & neck pain
3 Lung cancer
4 COPD
5 Diabetes
6 Other musculoskeletal
7 Cerebrovascular disease
8 Depressive disorders
9 Sense organ diseases
10 Chronic kidney disease
11 Colorectal cancer
12 Breast cancer
13 Anxiety disorders
14 Road injuries
15 Pancreatic cancer



### Rate of DALYs lost, both sexes, 70+ years OCDE countries 2013



# Leading Causes of DALYS, both sexes 70+ years old Mexico and USA 2013

#### **MEXICO**

Ischemic heart disease
Diabetes
Chronic kidney disease
COPD
Alzheimer disease
Sense organ diseases
Cerebrovascular disease
Low back & neck pain
Lower respiratory infect
0 Osteoarthritis
1 Other musculoskeletal
2 Protein-energy malnutrition
3 Prostate cancer
4 Cirrhosis alcohol
5 Hypertensive heart disease

#### USA

2 Alzheimer disease
3 COPD
4 Cerebrovascular disease
5 Sense organ diseases
6 Lung cancer
7 Diabetes
8 Low back & neck pain
9 Falls
10 Chronic kidney disease
1
11 Lower respiratory infect
11 Lower respiratory infect 12 Other musculoskeletal
11 Lower respiratory infect 12 Other musculoskeletal 13 Colorectal cancer
11 Lower respiratory infect12 Other musculoskeletal13 Colorectal cancer14 Prostate cancer
11 Lower respiratory infect12 Other musculoskeletal13 Colorectal cancer14 Prostate cancer15 Other cardiovascular

IHME

# Leading Causes of YLDs, both sexes 50-69 years old Mexico and USA 2013

#### **MEXICO**

# 1 Diabetes 2 Low back pain 3 Other musculoskeletal 4 Major depression

5 Other hearing loss

6 COPD

7 Osteoarthritis

8 Neck pain

9 Anxiety disorders

10 Ischemic heart disease

11 Edentulism

12 Refraction & accomodation

13 Migraine

14 Schizophrenia

15 Rheumatoid arthritis

#### USA

- 1 Low back pain
2 Other musculoskeletal
3 Diabetes
4 COPD
5 Major depression
6 Neck pain
7 Other hearing loss
8 Anxiety disorders
- 9 Falls
- 10 Osteoarthritis
11 Ischemic heart disease
12 Ischemic stroke
13 Edentulism
- 14 Schizophrenia
15 Migraine



# Leading Causes of YLDs, both sexes 70+ years old Mexico and USA 2013

#### MEXICO

1 Other hearing loss
2 Low back pain
3 Alzheimer disease
4 Osteoarthritis
5 Diabetes
5 Other musculoskeletal
7 COPD
3 Major depression
9 Edentulism
10 Refraction & accomodation
11 Ischemic heart disease
12 Cataract
13 Falls
14 Rheumatoid arthritis

- . . . . .
- 15 Neck pain

#### USA

1 Alzheimer disease				
2 Other hearing loss				
3 Low back pain				
4 COPD				
5 Falls				
6 Diabetes				
7 Other musculoskeletal				
8 Ischemic heart disease				
9 Ischemic stroke				
10 Osteoarthritis				
11 Edentulism				
12 Major depression				
13 Neck pain				
14 Other cardiovascular				
15 Other unintentional				

IHME

### Risk Factors Attributable to DALYs, both sexes Mexico 2013



### Risk Factors Attributable to DALYs, both sexes USA 2013



### Risk Factors Attributable to DALYs, USA and Mexico 2013

#### 1 Smoking

2 High body-mass index

3 High systolic blood pressure

4 High fasting plasma glucose

5 High total cholesterol

6 Alcohol use

7 Low physical activity

8 Diet low in fruits

9 Diet high in processed meat

10 Diet high in sodium

### USA

1 Smoking

2 High systolic blood pressure

3 High body-mass index

4 High fasting plasma glucose

5 Low glomerular filtration rate

6 Low physical activity

7 High total cholesterol

8 Diet high in sodium

9 Diet low in fruits

10 Diet low in vegetables

High fasting plasma glucose
 High body-mass index
 High systolic blood pressure
 Low glomerular filtration rate
 Alcohol use
 Diet high in sugar-sweetened beverages
 Diet high in processed meat

8 Diet low in whole grains

9 Smoking

10 High total cholesterol

### MEXICO

1 High fasting plasma glucose

2 High systolic blood pressure

3 High body-mass index

4 Low glomerular filtration rate

5 Smoking

6 High total cholesterol

7 Low physical activity

8 Diet low in whole grains

9 Alcohol use

10 Diet high in processed meat

### 50-69 years old

### 70+ years old



# Healthy Life Expectancy (HALE) by Sex USA and Mexico, 1990 and 2013

Sex	year	<b>United States</b>	Mexico	<b>Diff Years</b>
male	1990	62.7	60.8	1.9
male	2013	65.8	63.8	2.0
male	change	3.1	3.0	
Female	1990	67.0	65.2	1.8
Female	2013	68.6	67.8	0.8
Female	change	1.6	2.6	
Both	1990	64.8	63.0	1.8
Both	2013	67.2	65.8	1.4
Both	change	2.4	2.8	



Are the Health Needs aligned with the Organized Social Response?

### • Health Needs

- **1. Demographic transition** is shifting burden from children to adults.
- 2. Disease transition is leading to a larger fraction of burden from non-communicable diseases.
- 3. Disability transition is shifting the burden of disease to conditions that cause disability but not substantial decrease of premature mortality.
- **4. Risk transition** is shifting the major risk factors from those of poverty to lifestyle risks.

### Health System

- 1. Organized to address crisis or acute episodes (infections and injuries)
- 2. Successful in infectious diseases but not for long term conditions or chronic treatments
- 3. Not organized to retain people
- 4. There is no incentive to follow up patients in the public sector
- 5. The dominant practice is to cure diagnostics; not management long duration treatments and diseases

### Rethinking the Organization of Health Care Systems

- Good performance in infections diseases and decreasing premature mortality
- Still invisible for the public health system several health conditions, such as: mental health, musculoskeletal disorders, Sense organs diseases, oral disorders, etc.
- "Victims of Success"
- It is imperative to incorporate three notions in our vision of the Health System (The triple "C")
  - Chronicity: on diseases, treatments and exposure
  - Comorbidity
  - Continuity: Relationship, Information, and organization
- Benchmarking of good HS performance to measure the burden that could be reduce without more investments
- To put more attention in the managerial and incentives strategies to deal with chronic diseases and long term treatments







"... When someone tells me you are too old to do something, I try to do it right away ..."

Pablo Picasso 1881-1973

# Acknowledgements

 The study of the Global Burden of Disease was developed by the Institute of Metrics and Evaluation Health of the University of Washington <u>http://www.healthdata.org/</u>

 The National Institute of Public Health of Mexico has accompanied this exercise with the participation of more than 40 researchers <u>http://www.insp.mx/</u>



