La prévalence de la démence augmente-t-elle ou diminue-t-elle?

Emiliano Albanese, MD PhD

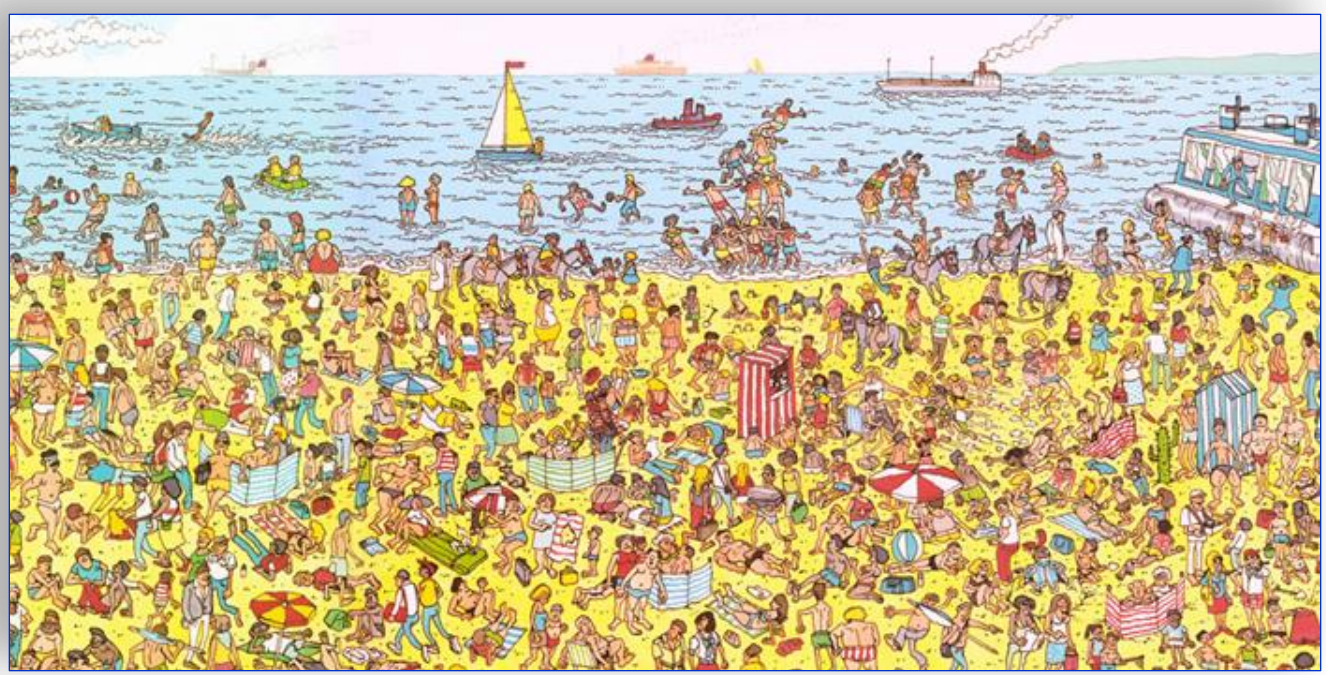
UNIVERSITÉ DE GENÈVE

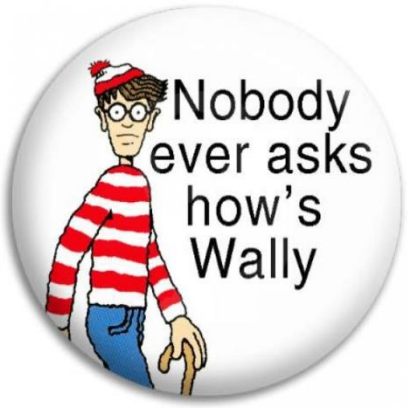
SSPH+ SWISS SCHOOL OF PUBLIC HEALTH +

Je n’ai aucune conflit d’intéret

Epidémiologie

L'épidémiologie est utilisée pour estimer le nombre de gens affectés par une maladie au niveau de la population
(Etymologie: EPI + DEMOS + LOGOS)





We do!

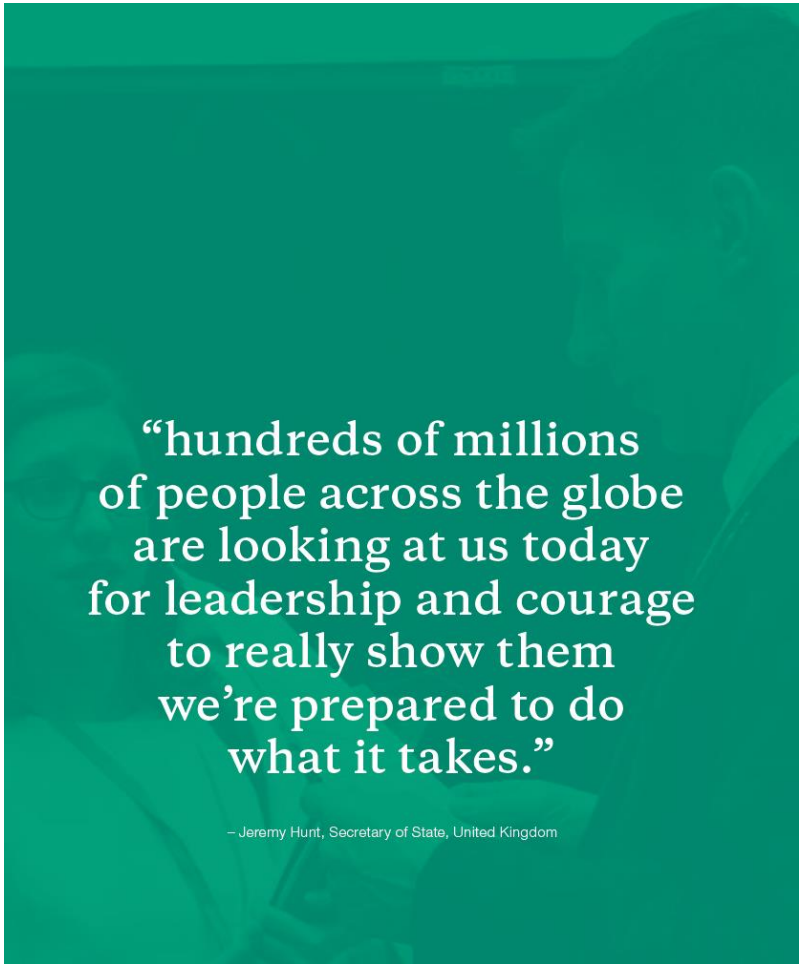
UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Ce qui n'est pas compté ne compte pas

L'importance de l'épidémiologie **descriptive**

Policy makers

Politiciens

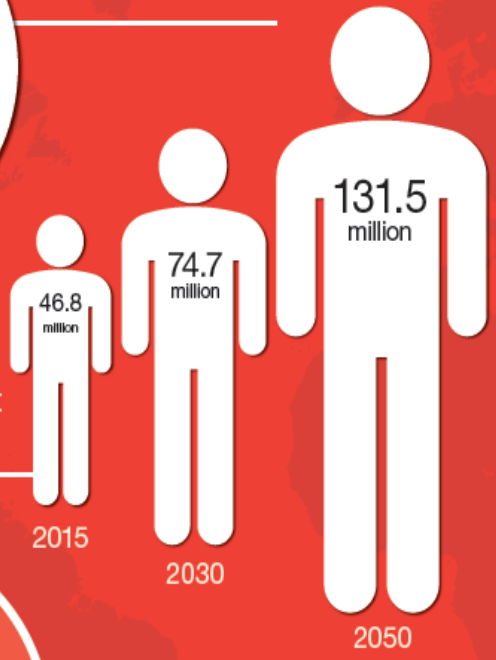


UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

The global impact of dementia

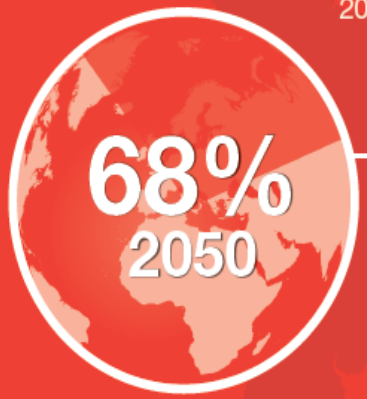
Around the world, there will be 9.9 million new cases of dementia in 2015,

one every 3 seconds

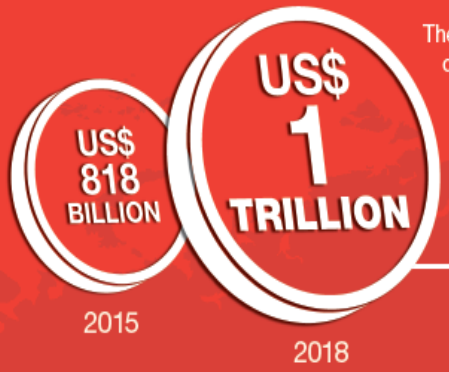


46.8 million people worldwide are living with dementia in 2015.

This number will almost double every 20 years.



Much of the increase will take place in low and middle income countries (LMICs): in 2015, 58% of all people with dementia live in LMICs, rising to 63% in 2030 and 68% in 2050.



The total estimated worldwide cost of dementia in 2015 is US$ 818 billion. By 2018, dementia will become a trillion dollar disease, rising to

US$ 2 trillion by 2030

If global dementia care were a country, it would be the

18th largest economy

in the world exceeding the market values of companies such as Apple and Google

(source: Forbes 2015 ranking).

This map shows the estimated number of people living with dementia in each world region in 2015.

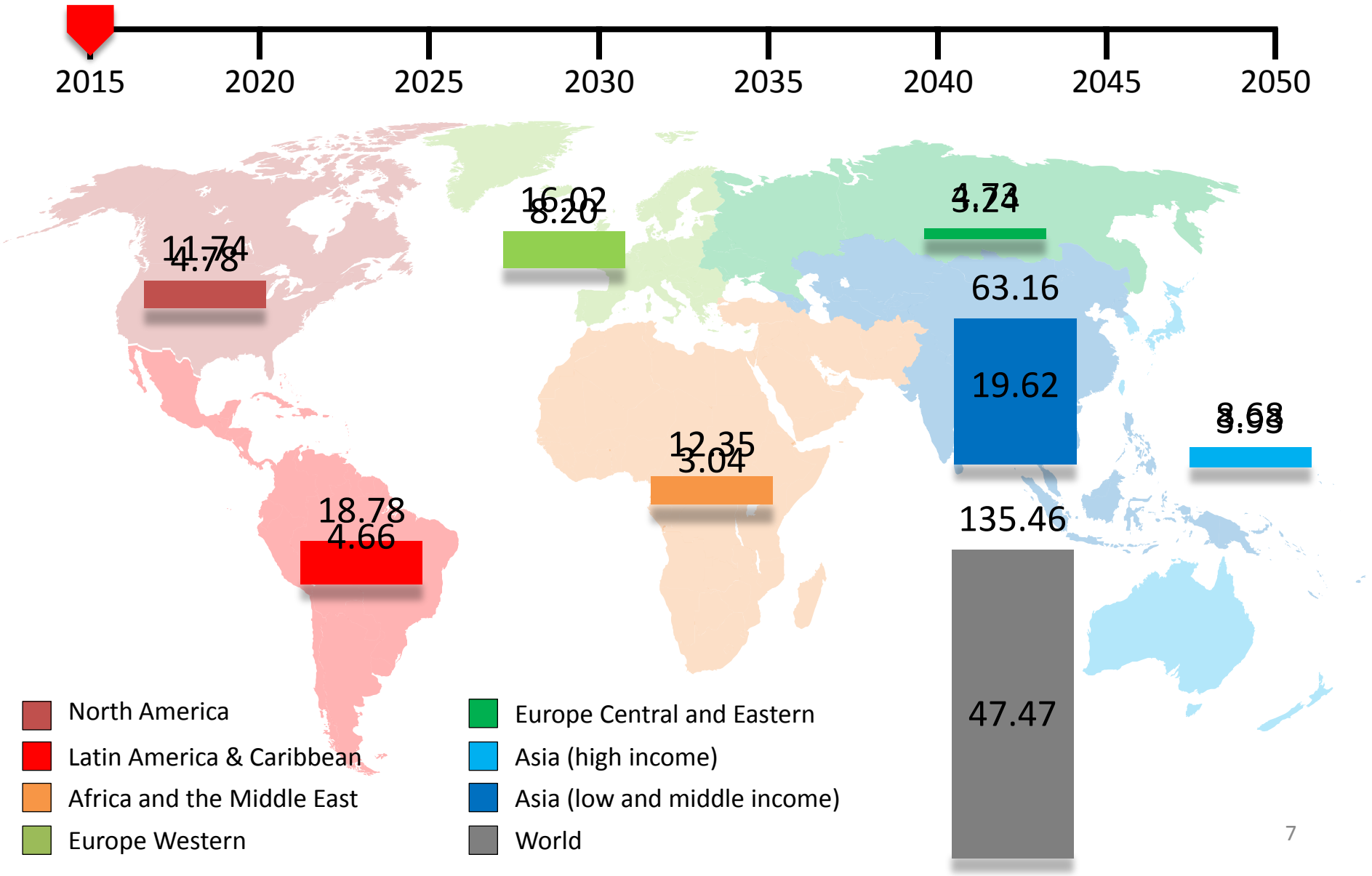
We must now involve more countries and regions in the global action on dementia.

The World Alzheimer Report 2015 was independently researched by King's College London and supported by Bupa.

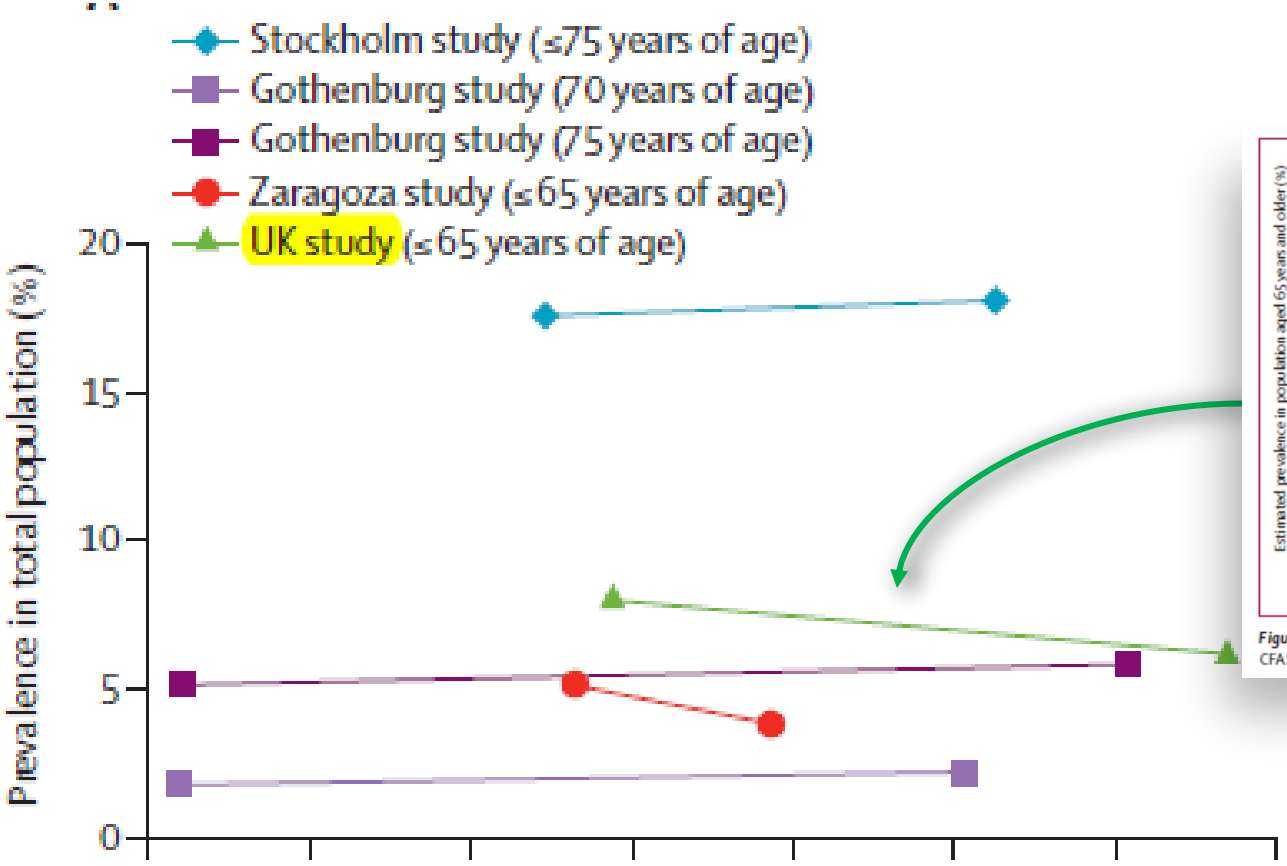
Alzheimer's Disease International

The global voice on dementia

Les **'tendances'** temporelles



Les **'tendances'** temporelles



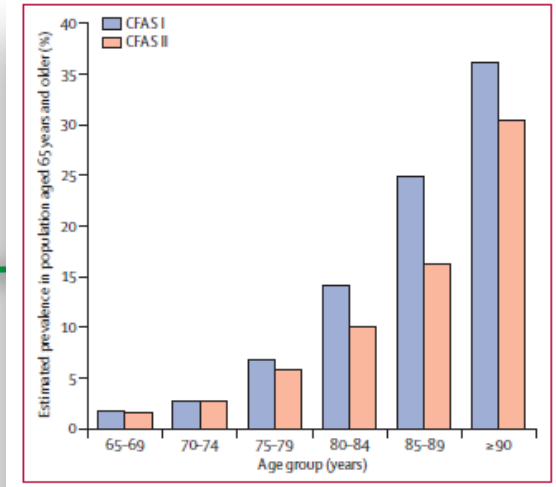


***Figure 1*: CFAS I and CFAS II age-specific dementia prevalence**
CFAS=Cognitive Function and Ageing Study.

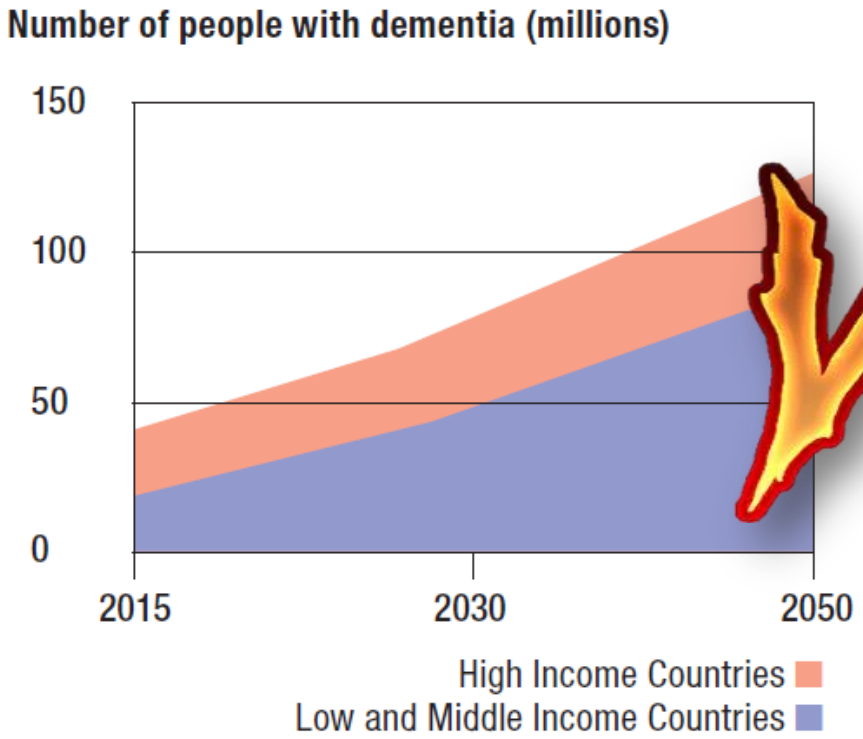
Fiona E Matthews,

Dementia in western Europe: epidemiological evidence and implications for policy making

Lancet Neurol 2015

Yu-Tzu Wu, Laura Fratiglioni, Fiona E Matthews, Antonio Lobo, Monique M B Breteler, Ingmar Skoog, Carol Brayne

Une contradiction?



VS.

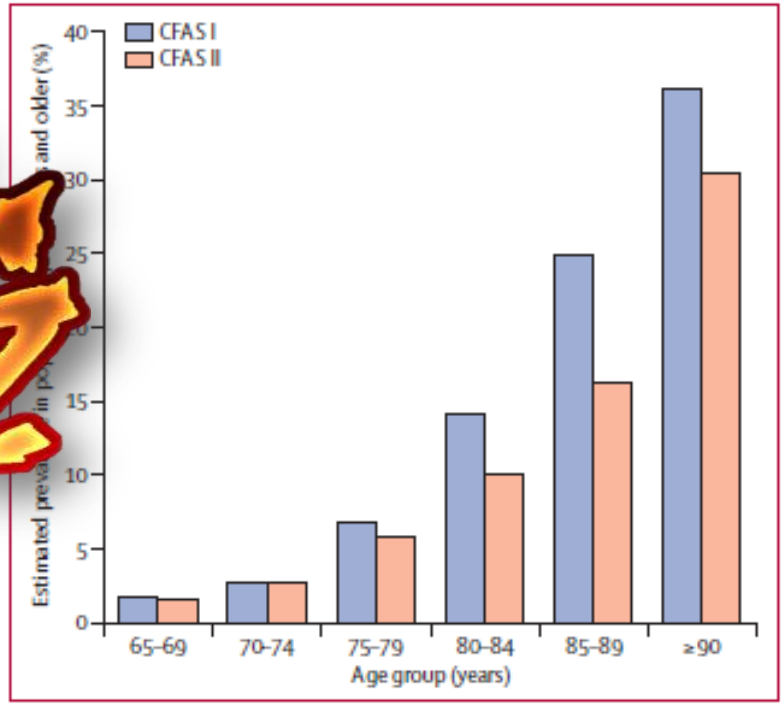
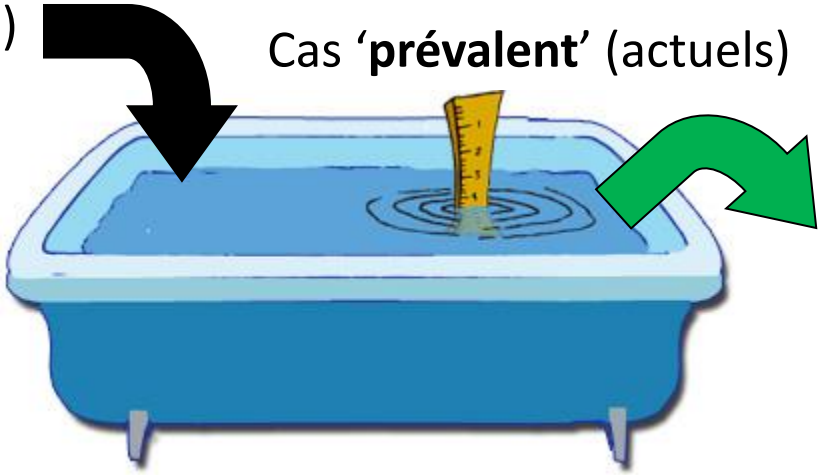


Figure 1: **CFAS I and CFAS II age-specific dementia prevalence**
CFAS=Cognitive Function and Ageing Study.

UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

2 concepts clés sur l'épidémiologie

Cas survenant
(‘**incidence**’)



Cas ‘**prévalent**’ (actuels)

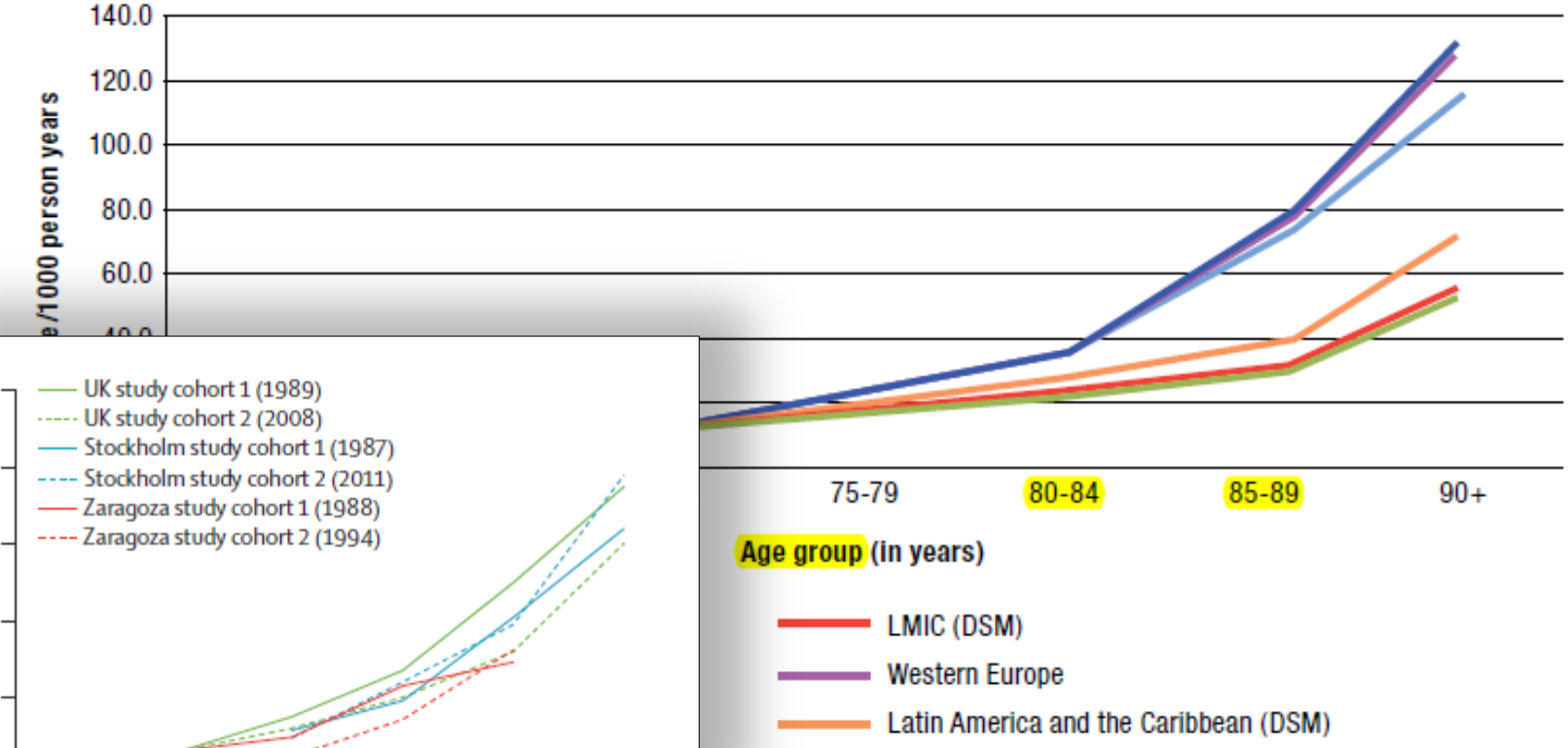
Durée

- ~~Retablissement~~
- Mort
- Nouveau diagnostique

Prévalence = Incidence *x* durée

Un risque plus important avec l'âge

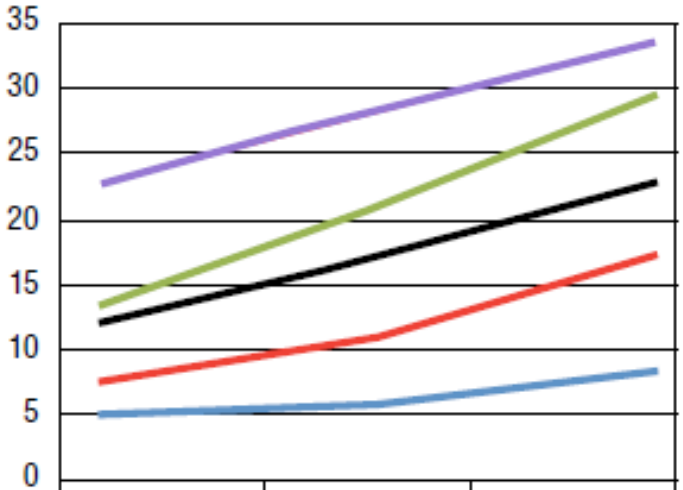
Figure 3.1
Estimated age-specific annual incidence of dementia, derived from Poisson random effects models, for world regions for which meta-analytical synthesis was feasible



UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Vieillissement des sociétés

Figure 1.1
Percentage of the total population aged 60 years and over, by country income level, 2015 to 2050



	2015	2030	2050
LIC	5.2	6.0	8.4
L-MIC	8.1	11.2	16.3
UMIC	13.3	20.5	28.9
HIC	22.0	27.3	31.6
World	12.2	16.3	21.2

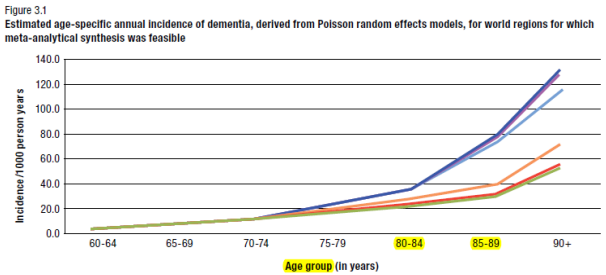
UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

C'est la faute au dénominateur

$$P = \frac{\#\ \text{existing cases}^{*}}{\text{population at risk}^{*}}$$

Le dénominateur s'élargit disproportionnellement vers plus de gens aptes à bouger 'en haut' du dénominateur

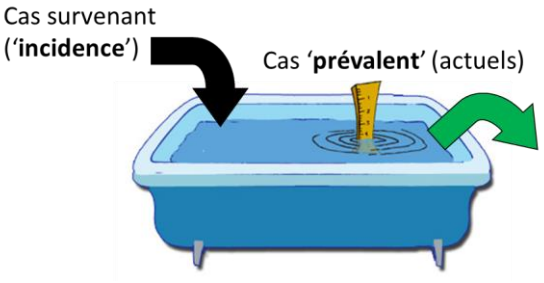
"It looks like you're suffering from TMB...too many birthdays.."



UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Age- et Sexe- **P** standardisé

P = I x D



Premier scénario: La **prévalence diminue** parce que l'incidence réduit à tous les âges, et que la durée reste stable

Second Scénario: La **prévalence reste constante** malgré une baisse dans l'incidence car la durée augmente (par exemple: plus longue survie pour ceux atteints de démence)

Troisième Scénario: La **prévalence augmente** chez les plus âgés mais **diminue** chez les plus jeunes car l'incidence est reportée aux âges plus avancés et la durée se réduit (la survie avec la démence est plus courte à cause du début de la maladie à des âges avancées

Compression de la morbidité cognitive

UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Age- et Sexe- **P** standardisé

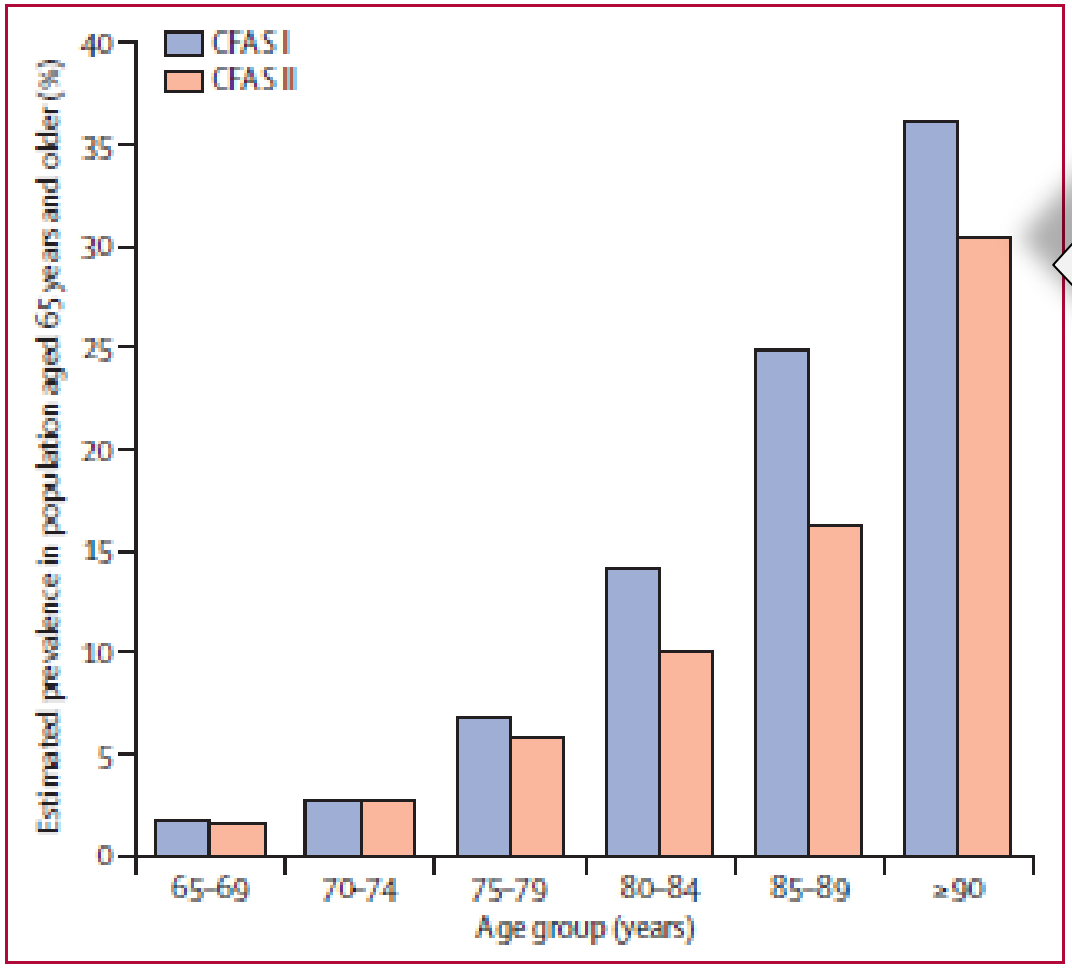


Figure 1: CFAS I and CFAS II age-specific dementia prevalence
CFAS=Cognitive Function and Ageing Study.

Le 3eme scénario (incidence réportée aux âges plus avancées) n'EST PAS ce aue l'étude CFAS a trouvé

UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Le changement dans l'**incidence** de la démence

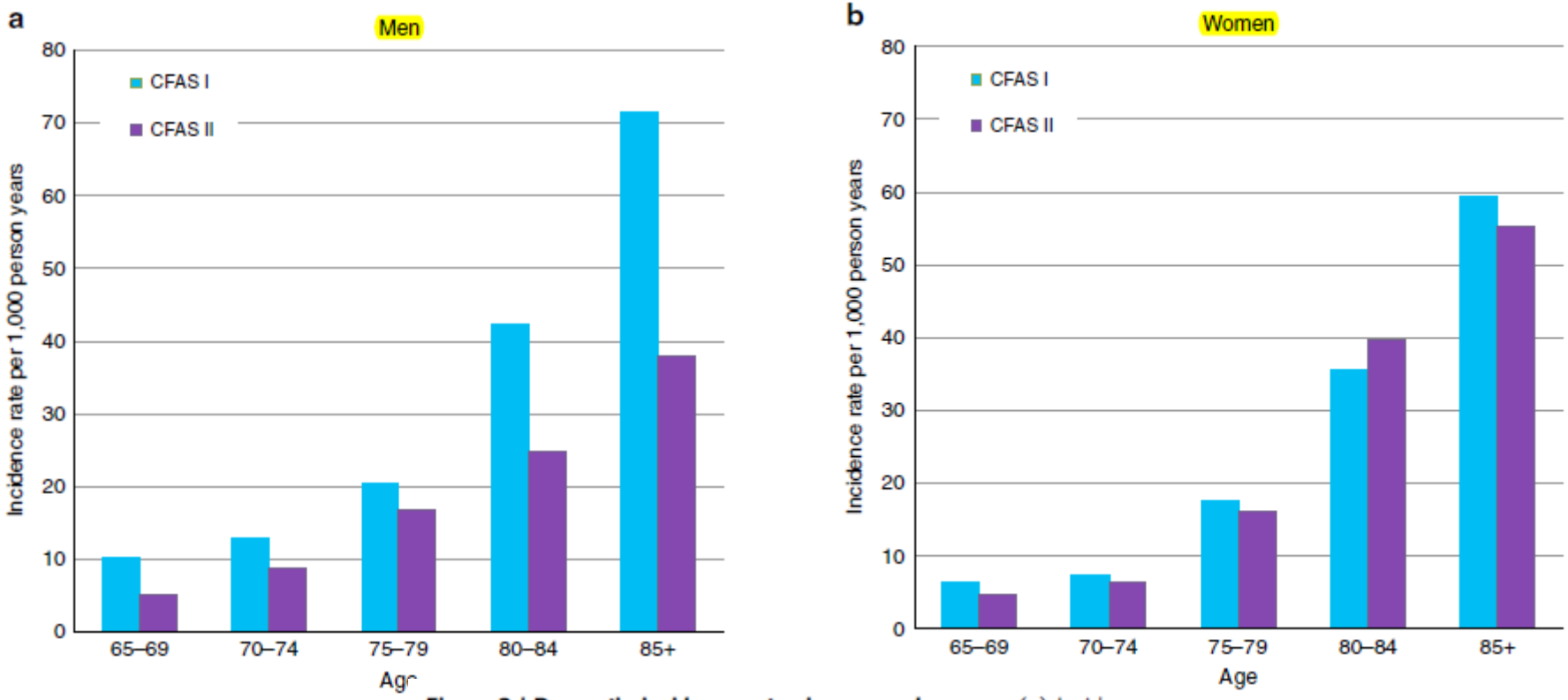


Figure 3 | Dementia incidence rates in men and women. (**a**) Incidence rate of dementia per 1,000 person years in men for CFAS I and CFAS II by age at baseline interview. (**b**) Incidence rate of dementia per 1,000 person years in women for CFAS I and CFAS II by age at baseline interview.

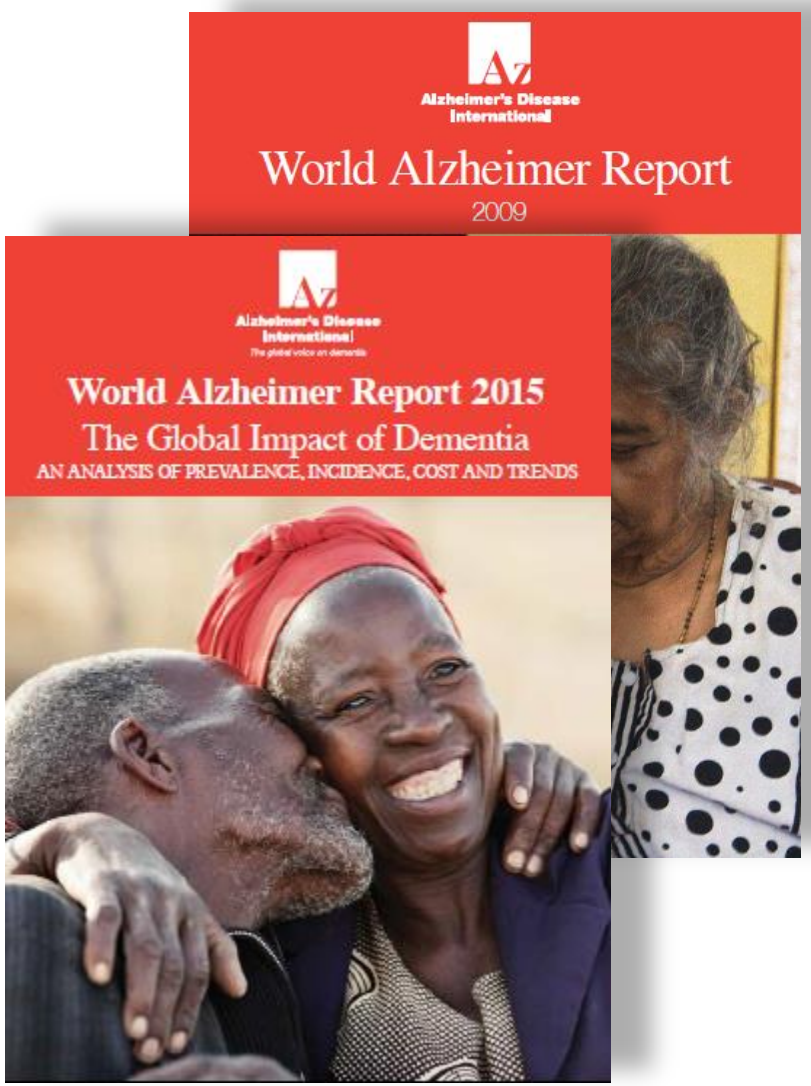
A two decade dementia incidence comparison from the Cognitive Function and Ageing Studies I and II

F.E. Matthews[1,2], B.C.M. Stephan[2], L. Robinson[2], C. Jagger[2], L.E. Barnes[3], A. Arthur[4], & C. Brayne[3], Cognitive Function and Ageing Studies (CFAS) Collaboration[#]

Etudes de P, I et D (survie)

Critères d'inclusion

1. Echantillonnage
2. Vérification de démence
3. Méthodologies gardées constantes entre les vagues de prévalence ou d'incidence successives



UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Prévalence

Study, setting, age range	Outcome/s	Period	Interval (y)	Relative change (%) per year
UK, MRC **CFAS**, 65 years and over [27]	Dementia (GMS/ AGECAT)	1993-2011	18 years	Reduction -1.7%
Spain, **Zaragoza**, 65 years and over [28]	Dementia (DSM-IV)	1988-1995	7 years	Reduction -3.6% (**Non-significant**)
HRS. Nationally representative. 70 years and over [21]	Mod/ sev cognitive impairment (probable dementia)	1993-2002	9 years	Reduction -3.2%
USA, **Indianapolis** African Americans, 65 year and over [31]				
Stockholm, Sweden, 75 years and over [29]				
Germany, insurance claim data, age 65 and over [32]				*N* 75-84y: -1.2%)
Goteborg, Sweden, aged 70, and age 75 [30]	Dementia – historical criteria (*Kay et al 1964*)	1976-2005	25 to 30 years	Stable
Umea, Sweden 85 years and over [33]	Dementia (DSM-IV)	2001-2006	5 years	Increase +8.0%
Japan, Hisayama, aged 65 years and over [34]	Dementia, AD	1985-2005	20 years	Increase +1.9% (dementia) +12.8% (AD)

PREVALENCE

- ❑ 9 études
- ❑ Conclusions incohérentes

Incidence

Study	Outcome/s	Period	Interval (y)	Relative change (%) per year
USA, **Indianapolis** African Americans, 65 years and over [36]	Dementia (DSM-III-R) AD	1991-2002	11	**Reduction** Dementia -5.5% AD -4.4% [*Reduction in youngest age groups*]
USA, Framingham, 60 years and over [37]	Dementia DSM-IV AD (NINCDS-	1980-2006	26	**Reduction** Dementia -1.7%; AD -1.2%; VaD -2.1% per year [***No reduction among the least educated; not explained by CVRFs***]
F y				**Reduction** Overall -3.5%; Women -3.8%
N y				**Stable** (-2.5% **Non-significant**)
G cla and over [40]	memantine			**Reduction** -3.0%
USA, Chicago [31]	AD	1997-2008	11	**Stable**
Nigeria, Ibadan [51]	Dementia (DSM-III-R) AD	1991-2002	11	**Stable**
UK, MRC CFAS, 65 years and over	Dementia (GMS/ AGECAT)	1989-2011		**20% Reduction at all ages** (but only in men)
Stockholm, Sweden, 75 years and over [29]	Dementia (DSM-III-R)	1988-2002	14	**Reduced incidence** ***inferred*** *from stable prevalence but increased survival with dementia*

INCIDENCE

- 8/9 études
- Réduction (presque) cohérente

Mortality

Study	Outcome/s	Period	Change in mortality and/ or mortality hazard ratio
USA, **HRS** [21]	Mortality hazard ratio	1993-2002	**Stable** Non-significant increase, from HR 2.53 to 3.11, p=0.09.
Sto			R – 2.42 (2.03-2.87) vs. 2.47) uction in mortality (HR 0.71, 95% 0.88) adjusted for age, sex, n and MMSE score.
Ger data, age 65 and over [32]	among people with dementia		**crease** in mortality among **women** with dementia (p<0.0001); Non-significant in men with dementia (p=0.75)
USA, **Indianapolis**, African Americans, 65 years and over [31,36]	Dementia duration	1991-2002	**Reduction** in mortality (i.e. longer survival with dementia **inferred** from stable prevalence of dementia [31], but 55% fall in incidence [36]

MORTALITE

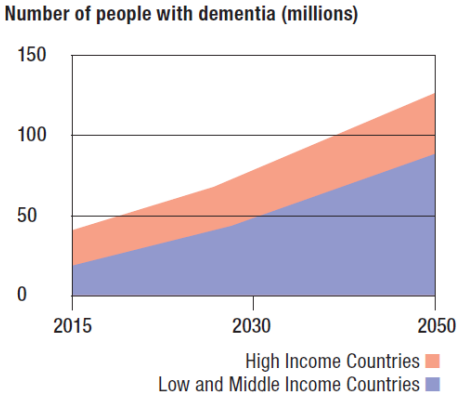
- ❑ 4 études (*trop peu?*)
- ❑ Conclusions incohérentes

Interprétation

1. Pas de preuves pour réfuter l'hypothèse d'une prévalence constante de démence pour un âge-spécifique

1. C'est trop tot et trop risqué d'accepter/croire que la démence diminue, mais le baisse de l'incidence doit être étudiée et bien compris

2. **Il n'y a PAS des données venant de la Suisse – on peut que faire des approximations**



P = I x D

Conclusion

1. La recherche épidémiologique en **Suisse** doit être conduite selon des méthodologies appropriées et standardisées.

2. Un' étude épidémiologique sur une échelle nationale est indispensable pour réduire le poids de la démence.

UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

Prince et al. Alzheimer's Research & Therapy (2016) 8:23
DOI 10.1186/s13195-016-0188-8

Alzheimer's Research & Therapy

RESEARCH Open Access

Recent global trends in the prevalence and incidence of dementia, and survival with dementia

Martin Prince[1*], Gemma-Claire Ali[1,2], Maëlenn Guerchet[1], A. Matthew Prina[1], Emiliano Albanese[3] and Yu-Tzu Wu[4]

Abstract

Background: Current projections of the scale of the coming dementia epidemic assume that the age- and sex-specific prevalence of dementia will not vary over time, and that population ageing alone (increasing the number of older people at risk) drives the projected increases. The basis for this assumption is doubtful, and secular trends (that is, gradual decreases or increases in prevalence over long-term periods) are perfectly plausible.

Methods: We carried out a systematic review of studies of trends in prevalence, incidence and mortality for people with dementia, conducted since 1980.

Results: We identified nine studies that had tracked dementia prevalence, eight that had tracked dementia incidence, and four that had tracked mortality among people with dementia. There was some moderately consistent evidence to suggest that the incidence of dementia may be declining in high-income countries. Evidence on trends in the prevalence of dementia were inconsistent across studies and did not suggest any clear overall trend. Declining incidence may be balanced by longer survival with dementia, although mortality trends have been little studied. There is some evidence to suggest increasing prevalence in East Asia, consistent with worsening cardiovascular risk factor profiles, although secular changes in diagnostic criteria may also have contributed.

Conclusions: We found no evidence to suggest that the current assumption of constant age-specific prevalence of dementia over time is ill-founded. However, there remains some uncertainty as to the future scale of the dementia epidemic. Population ageing seems destined to play the greatest role, and prudent policymakers should plan future service provision based upon current prevalence projections. Additional priorities should include investing in brain health promotion and dementia prevention programs, and monitoring the future course of the epidemic to chart the effectiveness of these measures.

Keywords: Dementia, Trends, Epidemiology, Projection, Global health, Worldwide, Systematic review, Meta-analysis

L'histoire entière est la

emiliano.albanese@unige.ch
UNIVERSITÉ DE GENÈVE

Remerciements

Prof Martin Prince
The Global Observatory for Ageing and Dementia Care, King's College London, UK

Prof Anders Wimo
Department of Neurobiology, Care sciences and Society, Karolinska Institute, Stockholm, Sweden

Dr Maëlenn Guerchet
The Global Observatory for Ageing and Dementia Care, King's College London, UK

Miss Gemma-Claire Ali
The Global Observatory for Ageing and Dementia Care, King's College London, UK

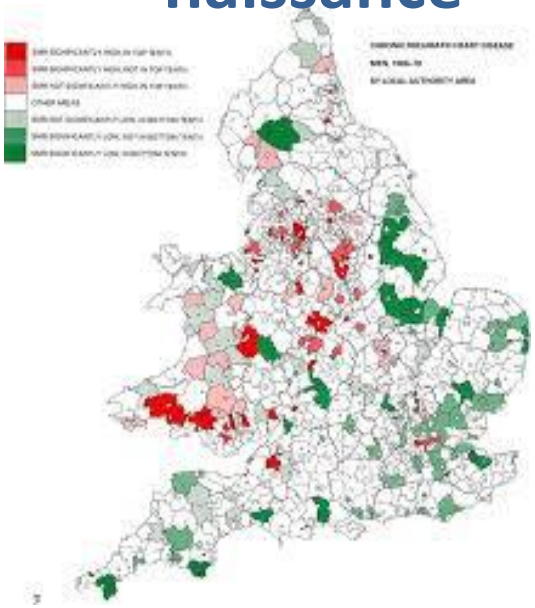
Dr Yu-Tzu Wu
Cambridge Institute of Public Health, University of Cambridge, UK

Dr Matthew Prina
The Global Observatory for Ageing and Dementia Care, King's College London, UK

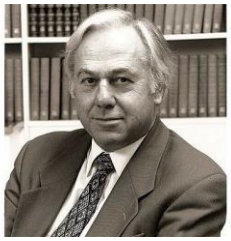
SSPH+
SWISS SCHOOL OF PUBLIC HEALTH +

L'importance des **'tendances'**

Effets de cohortes de naissance



Informer



Formulation d'hypothèses expliquantes

UNIVERSITÉ DE GENÈVE
emiliano.albanese@unige.ch

'Tendances' géographiques

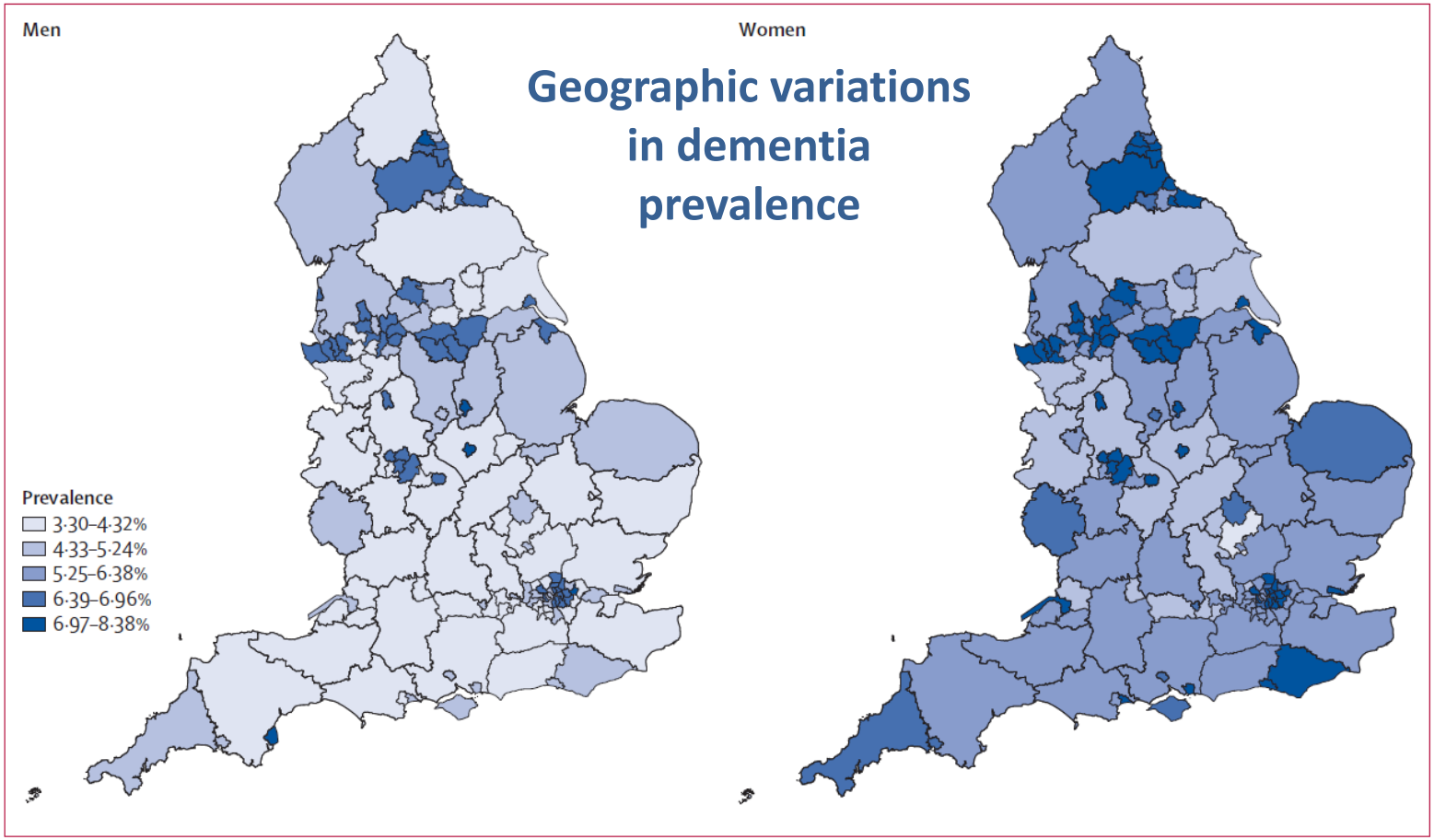


Figure 2: Estimated dementia prevalence in the UK in 2011, by sex and local authority

Fiona E Matthews, Antony Arthur, Linda E Barnes, John Bond, Carol Jagger, Louise Robinson, Carol Brayne, on behalf of the Medical Research Council Cognitive Function and Ageing Collaboration