



UiT The Arctic University of Norway

Statistical PARADOXES

Rafael Nozal Cañadas
HDL Seminar 2021.10.18



Gambler Paradox



Berkson's Paradox



Survival Bias



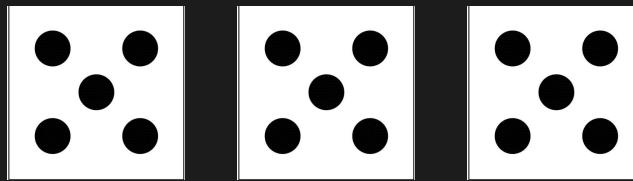
Simpson's Paradox



THE GAMBLER PARADOX

‘Humans suck at statistics and there
is nothing you can do about it! ’

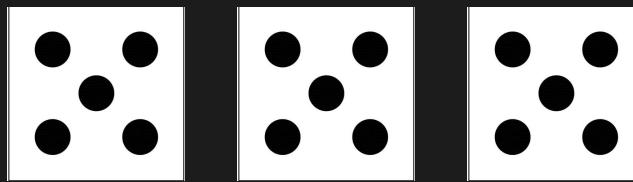
Future events
have lower probability



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P(5)
↓

Future events
have lower probability



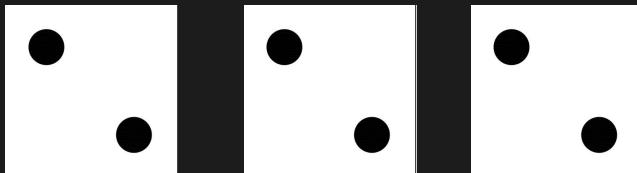
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$P(5)$
↓

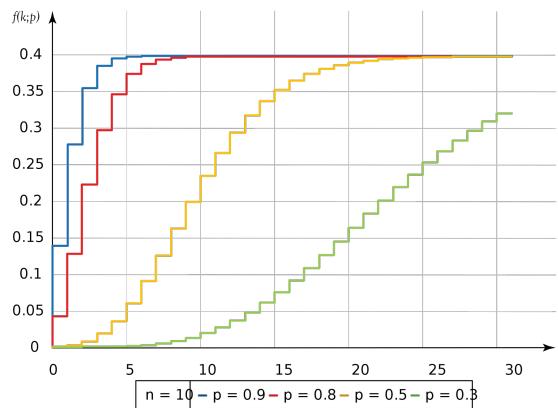
$P(2)$



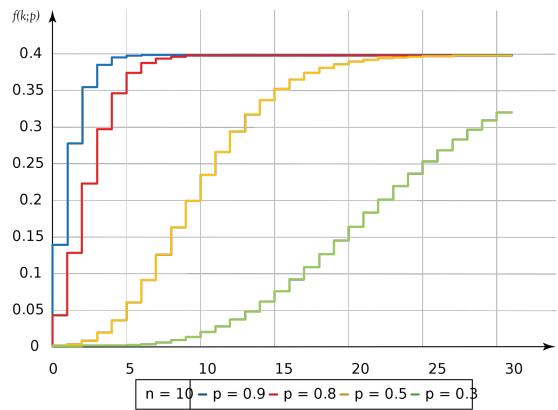
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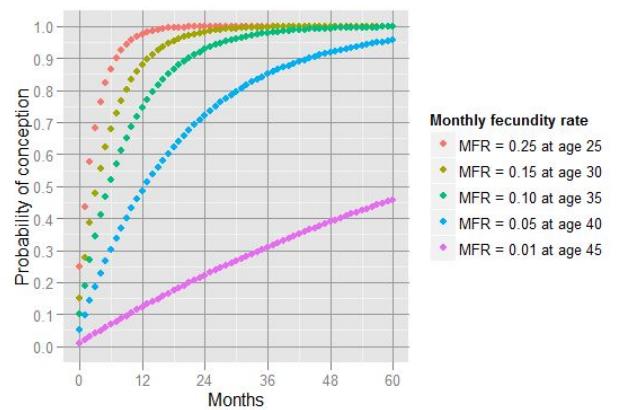
Past events
have lower probability



Negative Binomial Distribution



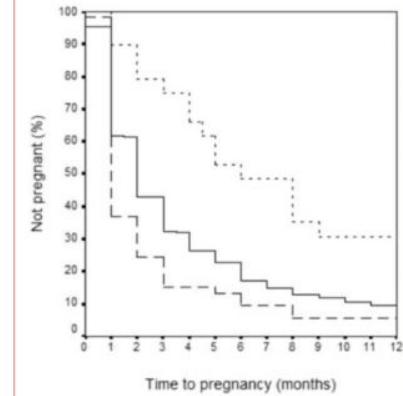
Negative Binomial Distribution



<https://www.nhs.uk/pregnancy/trying-for-a-baby/how-long-it-takes-to-get-pregnant/>

FIGURE 2

Time to pregnancy for pregnancies ending in single live birth ($n = 4,759$; solid line) or multiple birth ($n = 57$; long-dashed line) and extrauterine pregnancies ($n = 29$; short-dashed line) among Swedish women.



Axmon. Time to pregnancy and pregnancy outcome. Fertil Steril 2005.

Time to pregnancy and pregnancy outcome

Anna Axmon, Ph.D., and Lars Hagmar, M.D. Division of Occupational and Environmental Medicine and Psychiatric Epidemiology, University Hospital, Lund, Sweden

INSTRUCTIONS ABOUT RANDOMNESS AND RUN DEPENDENCY
IN TWO-CHOICE LEARNING¹

LEE ROY BEACH
University of Washington

AND-

RICHARD G. SWENSSON
University of Michigan

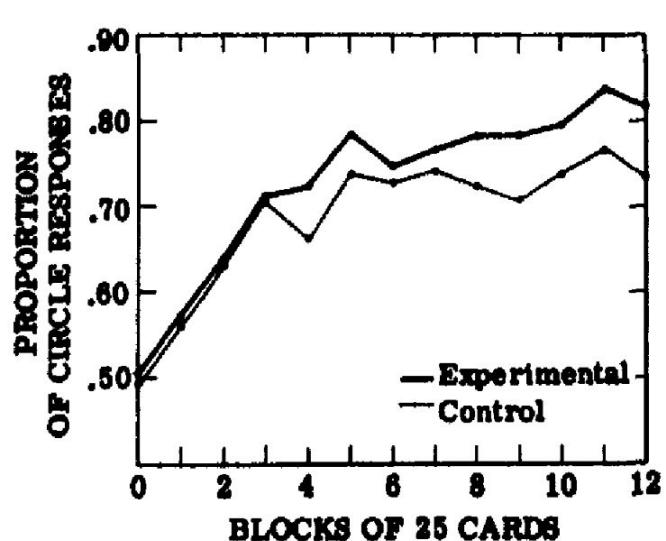


FIG. 2. Proportion of circle responses over blocks of trials for experimental and control groups.

Grouping and Gambling: A Gestalt Approach to Understanding the Gambler's Fallacy

Christopher J. R. Roney , Lana M. Trick

Grouping and Gambling: A Gestalt Approach to Understanding the Gambler's Fallacy

Christopher J. R. Roney , Lana M. Trick



Fair and random coin toss



Cheating coin, always same result



Toss coin that is actually studied

Grouping and Gambling: A Gestalt Approach to Understanding the Gambler's Fallacy

Christopher J. R. Roney , Lana M. Trick



Fair and random coin toss

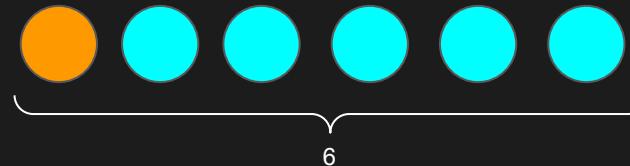
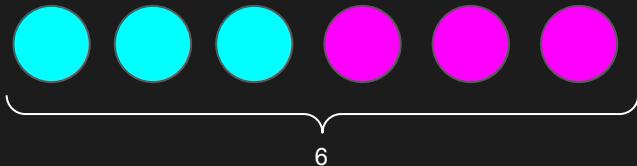


Cheating coin, always same result

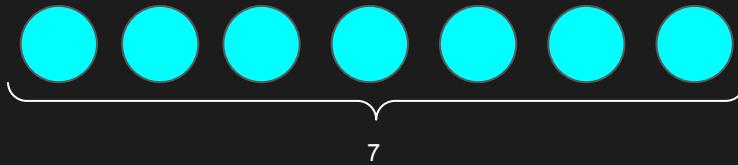
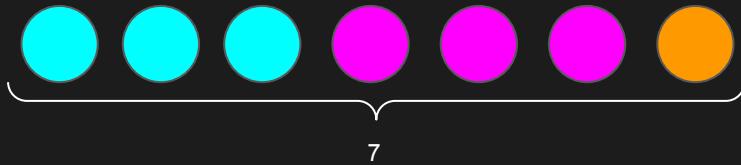


Toss coin that is actually studied

A



B



† THE BERKSON'S PARADOX

‘Study the whole population ch1:
Hospital data sucks’

LIMITATIONS OF THE APPLICATION OF FOURFOLD TABLE ANALYSIS TO HOSPITAL DATA*

JOSEPH BERKSON, M.D.,

Division of Biometry and Medical Statistics, Mayo Clinic,
Rochester, Minnesota

Table 2

Relation of cholecystitis to diabetes—hospital population

	A Cholecystitis	Not A Not cholecystitis	Total
B: Diabetes	28	548	576
Not B: Not diabetes	1,326	39,036	40,362
Total	1,354	39,584	40,938
Cholecystitis in diabetic group			4.86%
Cholecystitis in control group (not diabetic)			3.28%
Difference			+1.58% ± 0.5%

$$28 / (28 + 548) = 0.0486$$

$$1326 / (1326 + 39036) = 0.0328$$

LIMITATIONS OF THE APPLICATION OF FOURFOLD TABLE ANALYSIS TO HOSPITAL DATA*

JOSEPH BERKSON, M.D.,

Division of Biometry and Medical Statistics, Mayo Clinic,
Rochester, Minnesota

Table 5
Cholecystitis and diabetes, general population

	Cholecystitis	Not cholecystitis	Total
Diabetes	3,000	97,000	100,000
Not diabetes	297,000	9,603,000	9,900,000
Total	300,000	9,700,000	10,000,000
Cholecystitis in diabetic group	3%		
Cholecystitis in control group (nondiabetic)	3%		
Difference	0%		

$$3K / (3K + 97K) = 0.03$$

$$297K / (297K + 9603K) = 0.03$$

LIMITATIONS OF THE APPLICATION OF FOURFOLD TABLE ANALYSIS TO HOSPITAL DATA*

JOSEPH BERKSON, M.D.,

Division of Biometry and Medical Statistics, Mayo Clinic,
Rochester, Minnesota

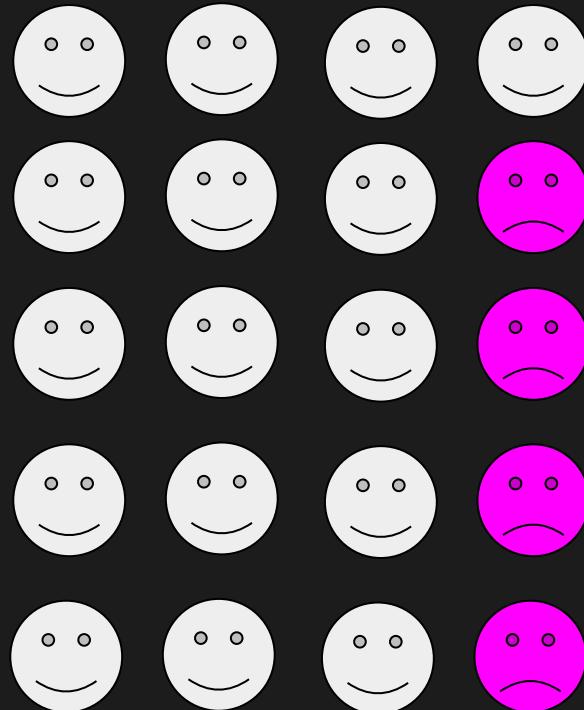
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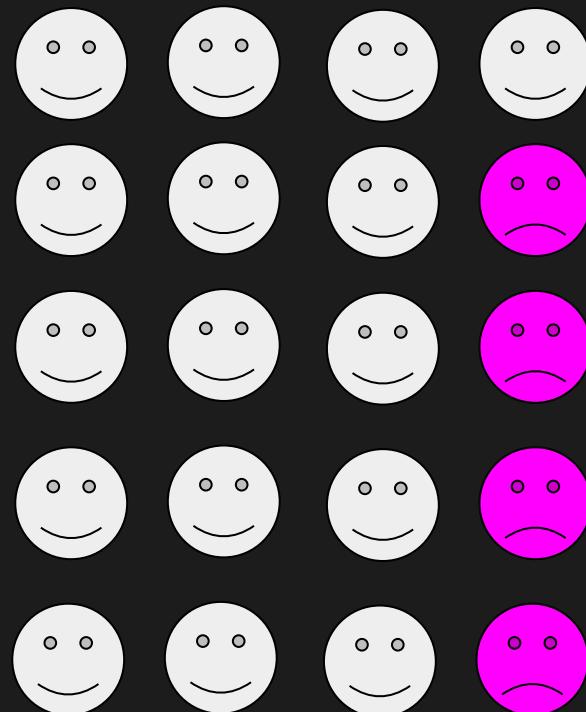
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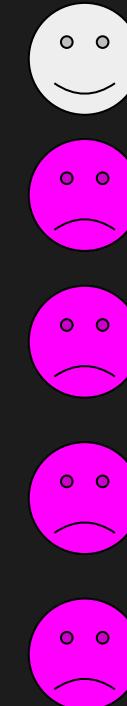
Total Population 😊 = 20%



Total Population 😊 = 20%



Hospital Population 😊 = 80%





SURVIVAL BIAS

*'Study the whole population ch2:
We are undead but not unpeople'*

199,000

LA

PRESSE MÉDICALE

Journal Bi-Hebdomadaire



DIRECTION SCIENTIFIQUE

MM. E. BONNAIRE, Professeur agrégé, Accoucheur et Professeur en chef de la Maternité.

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J.-L. FAURE, Professeur agrégé, Chirurgien de l'Hôpital Cochin.

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VINGT-QUATRIÈME ANNÉE

1916

199,000

PARIS

MASSON ET C[°], ÉDITEURS

LIBRAIRES DE L'ACADEMIE DE MEDECINE

120, BOULEVARD SAINT-GERMAIN, 120



199.000

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1916

199.000

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MASSON ET C[°], ÉDITEURS

LIBRAIRES DE L'ACADEMIE DE MÉDECINE

120, BOULEVARD SAINT-GERMAIN, 120

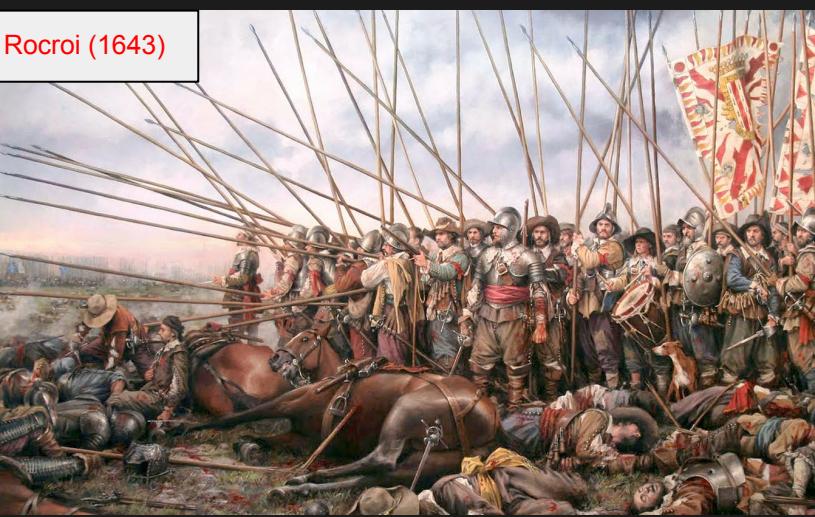


ROLE PROTECTEUR DU CASQUE MÉTALLIQUE DE GUERRE

Par M. le médecin principal B. ROUSSY
du Service médical de la Place de Paris (Etat-major),
Directeur adjoint à l'Ecole pratique des Hautes-Études
(au Collège de France).



Battle of Rocroi (1643)



Battle of Narva (1700)



Gettysburg (1863)



Battle of Liège (1914)



199.000

LA

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VINGT-QUATRIÈME ANNÉE

1916

199.000

PARIS
MASSON ET C[°], ÉDITEURS

LIBRAIRES DE L'ACADEMIE DE MÉDECINE

120, BOULEVARD SAINT-GERMAIN, 1^e

ROLE PROTECTEUR DU CASQUE MÉTALLIQUE DE GUERRE

Par M. le médecin principal B. ROUSSY
du Service médical de la Place de Paris (Etat-major),
Directeur adjoint à l'Ecole pratique des Hautes-Études
(au Collège de France).



	Blessures du crâne	Blessures de tout le reste du corps	pour 100
Juillet et Août . .	314	3.698	8,49
Décemb. et Janv.	151	921	16,82

Ainsi, il y a eu, pour cent blessures faites sur le reste du corps, 8,5 blessures du crâne, dans le premier cas, et 16,82 dans le second. Le pourcentage a doublé.

Il est évident que ce dernier pourcentage de 16,82 eût été encore beaucoup plus élevé, si tous les combattants, au lieu seulement d'une

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PRESSE MÉDICALE

Journal Bi-Hebdomadaire

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VINGT-QUATRIÈME ANNÉE

1916

MASSON ET C[°], ÉDITEURS

LIBRAIRES DE L'ACADEMIE DE MÉDECINE

120, BOULEVARD SAINT-GERMAIN, 120



Protection role of the metallic helmet of war

PAR M. LE DOCTEUR PARIS, PARIS, PAR D. ROUSSET
du Service médical de la Place de Paris (Etat-major),
Directeur adjoint à l'Ecole pratique des Hautes-Études
(au Collège de France).



Craneal injuries

Body injuries

July and August (1915)

	Blessures du crâne	Blessures de tout le reste du corps	pour 100
Juillet et Août . .	314	3.698	8,49
Décemb. et Janv.	151	921	16,82

December (2015) and January (2016)

pour cent blessures faites sur le
blessures du crâne, dans le pre-
dans le second. Le pourcentage
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Il est évident que ce dernier pourcentage de
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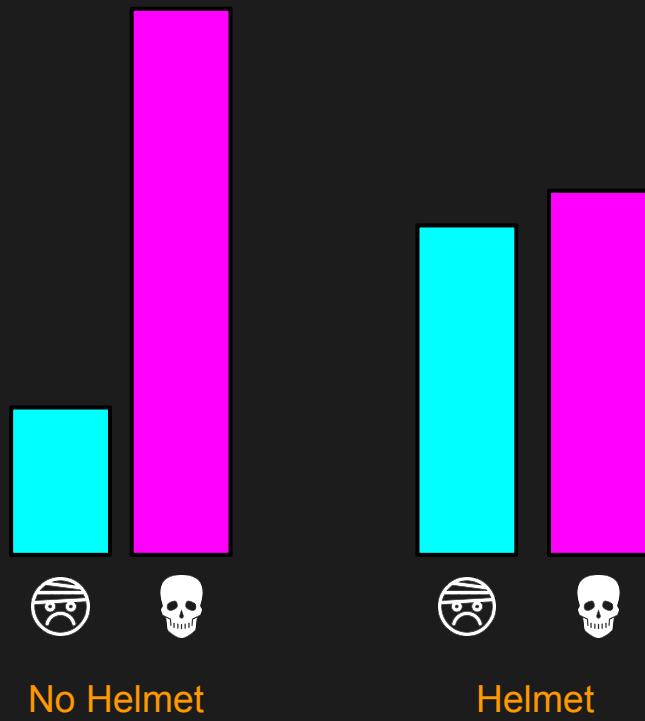
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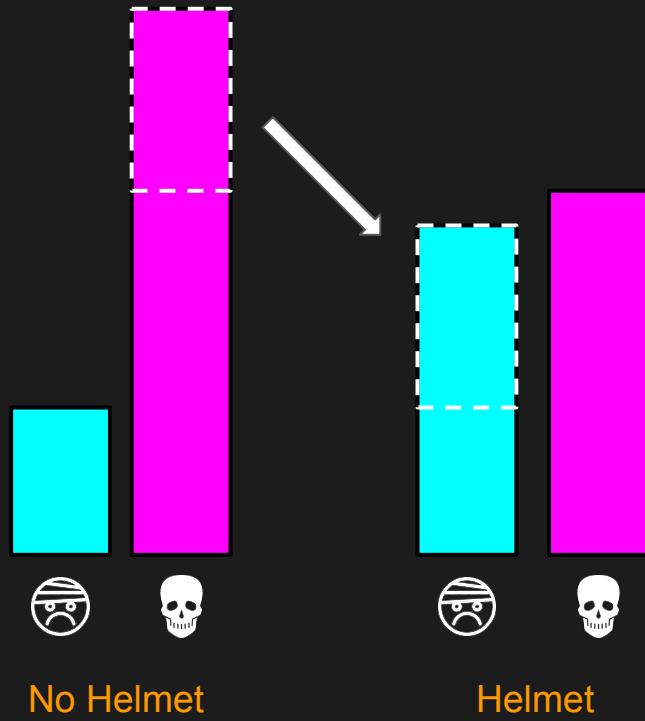


No Helmet



Helmet





\bar{x} THE SIMPSON'S PARADOX

‘You are NEVER again going to sleep
well at night after doing an average’





Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.





Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.



CFR = 10%

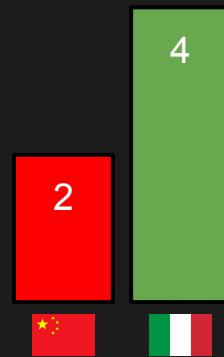




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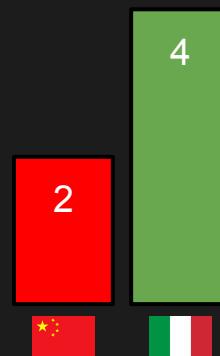
CFR



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World Health Organization



CFR

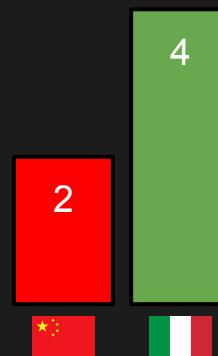




Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.



World Health Organization



CFR

Rank	Hospital	Country	City	Hospital Beds				
1	Mayo Clinic - Rochester	USA	Rochester, MN	1,265	- Addenbrooke's	United Kingdom	Cambridge	1,486
2	Cleveland Clinic	USA	Cleveland, OH	1,265	- All India Institute of Medical Sciences	India	New Delhi	2,478
3	Massachusetts General Hospital	USA	Boston, MA	1,011	- Azienda Ospedaliera di Padova	Italy	Padova	1,402
4	Toronto General (University Health Network)	Canada	Toronto	727	- Bangkok Hospital	Thailand	Bangkok	203
5	Charité - Universitätsmedizin Berlin	Germany	Berlin	3,011	- Cedars-Sinai Medical Center	USA	Los Angeles, CA	880
6	The Johns Hopkins Hospital	USA	Baltimore, MD	1,007	- Hôpital Lyon Sud (HCL)	France	Pierre Benite	1,500
7	Universitätsspital Zürich	Switzerland	Zürich	953	- Chelsea and Westminster Hospital	United Kingdom	London	430
8	Singapore General Hospital (SGH)	Singapore	Singapore	1,400	- Duke University Hospital	USA	Durham, NC	972
9	Sheba Medical Center	Israel	Ramat Gan	1,990	- Freeman Hospital	United Kingdom	Newcastle Upon Tyne	500
10	Karolinska Universitetssjukhuset	Sweden	Södertälje	1,340	- Haukeland Universitetssykehus	Norway	Bergen	939
11	Aarhus Universitetshospital	Denmark	Aarhus	1,150	- Hôpital Claude-Huriez	France	Lille	700
12	Hôpital Universitaire Pitié Salpêtrière	France	Paris	1,717	- Hôpital Européen Georges Pompidou	France	Paris	827
13	Centre Hospitalier Universitaire Vaudois	Switzerland	Lausanne	929	- Hôpital Saint-Joseph	France	Paris	669
14	Universitätsklinikum Heidelberg	Germany	Heidelberg	1,988	- Hôpital Purpan	France	Toulouse	714
15	University of Michigan Hospitals - Michigan Medicine	USA	Ann Arbor, MI	1,006	- Hospital General Universitario Gregorio Marañón	Spain	Madrid	1,349
16	St. Luke's International Hospital	Japan	Tokyo	520	- Hospital Ramón y Cajal	Spain	Madrid	901
17	Brigham And Women's Hospital	USA	Boston, MA	804	- Hospital Sírio Libanês	Brazil	Sao Paulo	461
18	The University of Tokyo Hospital	Japan	Tokyo	1,217	- Hospital Universitari Vall d'Hebron	Spain	Barcelona	1,315
19	Rigshospitalet - København	Denmark	Copenhagen	1,118	- Hospital Universitario 12 de Octubre	Spain	Madrid	1,196
20	UMC Utrecht	Netherlands	Utrecht	1,042	- Istituto Clinico Humanitas	Italy	Milan	747
21	Hospital Clínic de Barcelona	Spain	Barcelona	844	- Kameda Medical Center	Japan	Kamogawa	917
22	UCSF Medical Center	USA	San Francisco, CA	782	- Klinikum rechts der Isar der Technischen Universität München	Germany	Munich	1,145
23	Les Hôpitaux Universitaires de Genève HUG - Cluse-Roseraie	Switzerland	Geneva	1,054	- Korea University - Anam Hospital	South Korea	Seoul	1,120
24	Sunnybrook Health Sciences Centre	Canada	Toronto	526	- Kurashiki Central Hospital	Japan	Kurashiki	1,166
25	Helsinki University Hospital	Finland	Helsinki	2,546	- Kyushu University Hospital	Japan	Fukuoka	1,275
26	Oslo Universitetssykehus	Norway	Oslo	1,625	- Mayo Clinic - Phoenix	USA	Phoenix, AZ	276
27	Universitätsklinikum Hamburg-Eppendorf	Germany	Hamburg	1,436	- North York General Hospital	Canada	Toronto	336
28	Royal Melbourne Hospital - Parkville	Australia	Melbourne	571	- Northwestern Memorial Hospital	USA	Chicago, IL	912
29	Mount Sinai Hospital	Canada	Toronto	308	- NYU Langone Hospitals	USA	New York, NY	1,127
30	Klinikum der Universität München	Germany	Munich	2,058	- Ospedale Papa Giovanni XXIII	Italy	Bergamo	1,024
31	National University Hospital (NUH)	Singapore	Singapore	1,200	- Ospedale San Raffaele - Gruppo San Donato	Italy	Milan	954
32	Groupe hospitalier Pellegrin	France	Bordeaux	1,472	- Policlinico Sant'Orsola-Malpighi	Italy	Bologna	1,484
33	St Thomas' Hospital	United Kingdom	London	920	- Policlinico Universitario A. Gemelli	Italy	Rome	1,548
34	Tel-Aviv Sourasky Medical Center	Israel	Tel Aviv	1,300	- Radboudumc Universiteit Medisch Centrum	Netherlands	Nijmegen	925
35	Stanford Health Care - Stanford Hospital	USA	Stanford, CA	477	- Royal Brisbane & Women's Hospital	Australia	Brisbane	1,000
36	THE Alfred	Australia	Melbourne	638	- Royal Prince Alfred Hospital	Australia	Sydney	911
37	Asan Medical Center	South Korea	Seoul	2,935	- Salford Royal	United Kingdom	Salford	676
38	Hospital Israelita Albert Einstein	Brazil	Sao Paulo	663	- Seoul National University - Bundang Hospital	South Korea	Seongnam	1,422
39	New York-Presbyterian Hospital-Columbia and Cornell	USA	New York, NY	2,410	- Seoul National University Hospital	South Korea	Seoul	1,868
40	Academisch Medisch Centrum	Netherlands	Amsterdam	1,002	- Severance Hospital - Yonsei University	South Korea	Seoul	2,641
41	Hospital Universitario La Paz	Spain	Madrid	1,268	- Tampere University Hospital	Finland	Tampere	1,142
42	Samsung Medical Center	South Korea	Seoul	2,157	- The Catholic University Of Korea - Seoul St. Mary's Hospital	South Korea	Seoul	1,453
43	Medizinische Hochschule Hannover	Germany	Hannover	1,520	- The Mount Sinai Hospital	USA	New York, NY	1,161
44	University College Hospital	United Kingdom	London	720	- The Royal Victoria Infirmary	United Kingdom	Newcastle Upon Tyne	680
45	Kyoto University Hospital	Japan	Kyoto	1,121	- Universitätsklinikum Carl Gustav Carus Dresden	Germany	Dresden	1,295
46	Hospital of the University of Pennsylvania-Drexel Presbyterian	USA	Philadelphia, PA	780	- Universitätsklinikum Freiburg	Germany	Freiburg	1,610
47	Grande Ospedale Metropolitano Niguarda	Italy	Milan	961	- Universitätsklinikum Köln	Germany	Cologne	1,455
48	Akademiska sjukhuset	Sweden	Östersund	943	- Universitätsklinikum Regensburg	Germany	Regensburg	885
49	Clinica Universidad de Navarra	Spain	Pamplona	241	- University of Colorado Hospital	USA	Aurora, CO	646
50	Ronald Reagan UCLA Medical Center	USA	Los Angeles, CA	445				

Public Safety ↑

Wellness Center ↑

↑ Behavioral Health Help Center

↑ M McDonald's

West Building ↑

EXIT



Chick-fil-A	McDonald's	Wendy's
Arkansas 1. Saline Memorial Hospital Benton	12. University of North Carolina Hospital Chapel Hill	
Florida 2. Baptist Medical Center Jacksonville Jacksonville 3. UF Health Shands Hospital at the University of Florida Gainesville	13. Duncan Regional Hospital Duncan	
Georgia 4. Northeast Georgia Medical Center Gainesville 5. Piedmont Fayette Hospital Fayetteville 6. University Hospital Augusta 7. Saint Agnes Hospital Baltimore	14. Greenville Memorial Hospital Greenville 15. Medical University of South Carolina University Hospital Complex Charleston	
Mississippi 8. North Mississippi Medical Center Tupelo 9. University of Mississippi Medical Center Jackson	16. Jackson-Madison County General Hospital Jackson	
North Carolina 10. Carolinas Medical Center Charlotte 11. Duke University Hospital Complex Durham	17. Baylor St. Luke's Medical Center/Texas Children's Hospital Complex Houston 18. Cook Children's Medical Center Fort Worth 19. University of Texas M.D. Anderson Cancer Center Houston	
Virginia 20. Virginia Commonwealth University Medical Center Richmond	20. Grady Hospital Atlanta 21. Northside Hospital Atlanta	
	22. Mercy Medical Center Des Moines	
	23. Abbott Northwestern Hospital Minneapolis	

Credit: PCRM





World Health
Organization

If I had COVID-19, I want to be treated in China, says WHO official

CGTN



If I had COVID-19,
I want to be treated in China.



Scroll for details



Could tobacco cure coronavirus? Don't laugh.

The Pentagon's medical research arm credited the use of tobacco plants in 2012 for the quick development of 10 million doses of flu vaccine.



Public health experts say infecting tobacco plants with a genetically modified coronavirus, if successful, could be scaled up quickly to respond to an international outbreak. | Patrick Sison/AP Photo

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By SARAH OWERMOHLE
02/15/2020 07:00 AM EST



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A nicotinic hypothesis for Covid-19 with preventive and therapeutic implications

jean-pierre CHANGEUX, Zahir Amoura¹, Felix Rey², Makoto Miyara¹

¹ Assistance Publique – Hôpitaux de Paris

² Pasteur Institute

Abstract

SARS-CoV-2 epidemics raises a considerable issue of public health at the planetary scale. There is a pressing urgency to find treatments based upon currently available scientific knowledge. Therefore, we tentatively propose a hypothesis which hopefully might ultimately help saving lives. Based on the current scientific literature and on new epidemiological data which reveal that current smoking status appears to be a protective factor against the infection by SARS-CoV-2 [1], we hypothesize that the nicotinic acetylcholine receptor (nAChR) plays a key role in the pathophysiology of Covid-19 infection and might represent a target for the prevention and control of Covid-19 infection.

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Figure 2. Observed and expected rates of daily smokers in COVID-19 patients (A) For outpatients. (B) For inpatients. Light shaded and dark histograms represent daily smokers rates in women and men, respectively. In blue: expected rate in each age and sex class; in red: observed rate in each age and sex class



In conclusion, our results suggest that active smokers may be protected against symptomatic COVID-19. This was evidenced for outpatients (who have less serious infections) as well as for hospitalized patients.



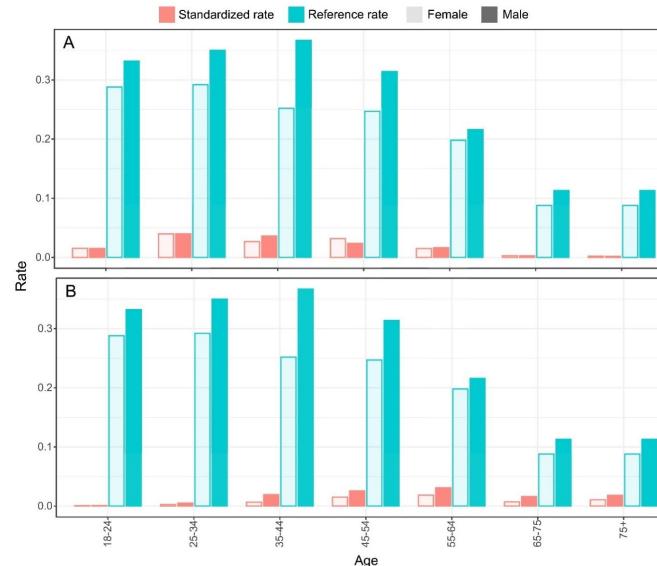
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Editorial: Nicotine and SARS-CoV-2: COVID-19 may be a disease of the nicotinic cholinergic system

Konstantinos Farsalinos^{1,2}, Raymond Niaura³, Jacques Le Houezec¹, Anastasia Barbouni², Aristidis Tsatsakis⁴, Dimitrios Kouretas⁵, Apostolos Vantarakis⁶, Konstantinos Poulas¹

Affiliations + expand

PMID: 32355638 PMCID: PMC7192087 DOI: 10.1016/j.toxrep.2020.04.012

[Free PMC article](#)

No abstract available

Conflict of interest statement

The authors declare no conflict of interest.



Redazione

16 marzo 2020 15:31

CORONAVIRUS

Coronavirus e fumatori: "Il rischio di finire in terapia intensiva è più del doppio"

L'Istituto Superiore di Sanità spiega come tale rischio, rispetto ai positivi al Covid-19 che non fumano, possa più che raddoppiare. Smettere, ora più che mai, è importante

Si parla di
coronavirus
fumatori



Coronavirus and smokers: “The risk of ending in the ICU is about double”

The Supreme Institute of Health explains how this risk, compared to the Covid-19 positives who do not smoke, can increase significantly. Quitting, now more than ever, is important

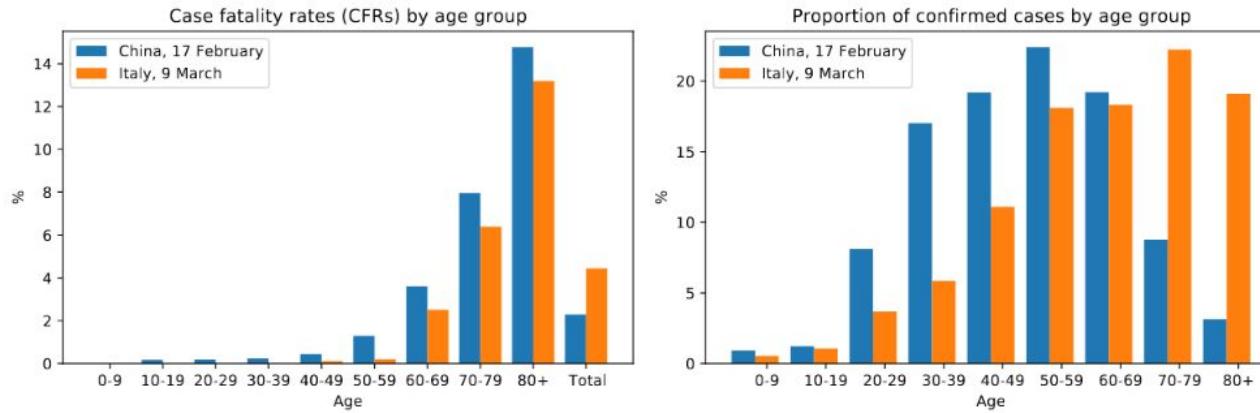


Fig. 1: (left) Covid-19 case fatality rates (CFRs) in Italy and China by age group and in aggregated form (“Total”), i.e., incl. all *confirmed* cases and fatalities up to the time of reporting (see legend). (right) Proportion of cases within each age group.

Simpson's paradox in Covid-19 case fatality rates: a mediation analysis of age-related causal effects

Julius von Kügelgen, Luigi Gresele, Bernhard Schölkopf

<https://arxiv.org/abs/2005.07180>

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Languages

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Country/Territory	Rank ▲	Median ages in years			
		2018 median		2020 medians	
		Combined	Combined	Male	Female
Monaco	1	53.1	55.4	53.7	57.0
Japan	2	47.3	48.6	47.2	50.0
Saint Pierre and Miquelon	3	46.5	48.5	47.9	49.0
Germany	4	47.1	47.8	46.5	49.1
Italy	5	45.5	46.5	45.4	47.5
Andorra	6	44.3	46.2	46.3	46.1
Hong Kong	7	44.4	45.6	44.2	46.5
Saint Barthelemy	8	44.1	45.6	45.5	45.8
Greece	9	44.5	45.3	43.7	46.8
San Marino	10	44.4	45.2	43.9	46.3
Slovenia	11	44.5	44.9	43.4	46.6
Isle of Man	12	44.2	44.6	43.6	45.6

Country/Territory	2018	2019	2020	2021	2022
China	63	37.4	38.4	37.5	39.4
United Arab Emirates	64	30.3	38.4	40.4	31.5
Cook Islands	65	36.5	38.3	37.8	38.7
Cyprus	66	36.8	37.9	36.7	39.4
Ireland	67	36.8	37.8	37.4	38.2
Trinidad and Tobago	68	36.0	37.8	37.3	38.3
Moldova	69	36.7	37.7	36.2	39.5
Australia	70	38.7	37.5	36.5	38.5

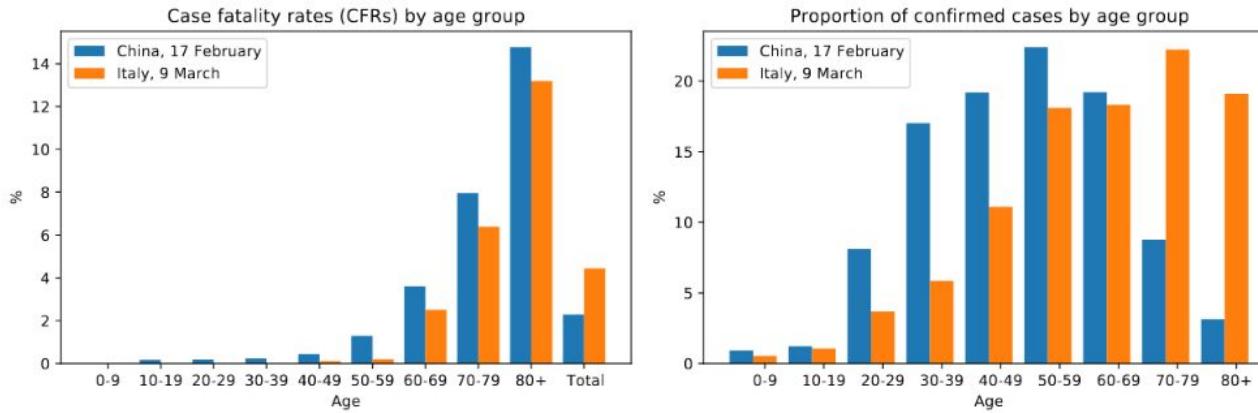


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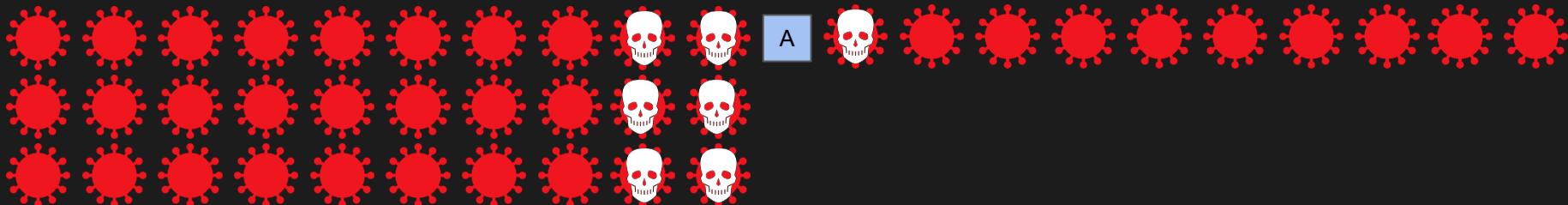
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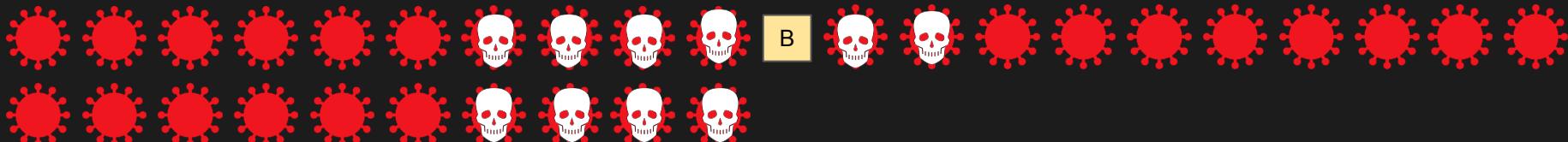
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CFR per age group

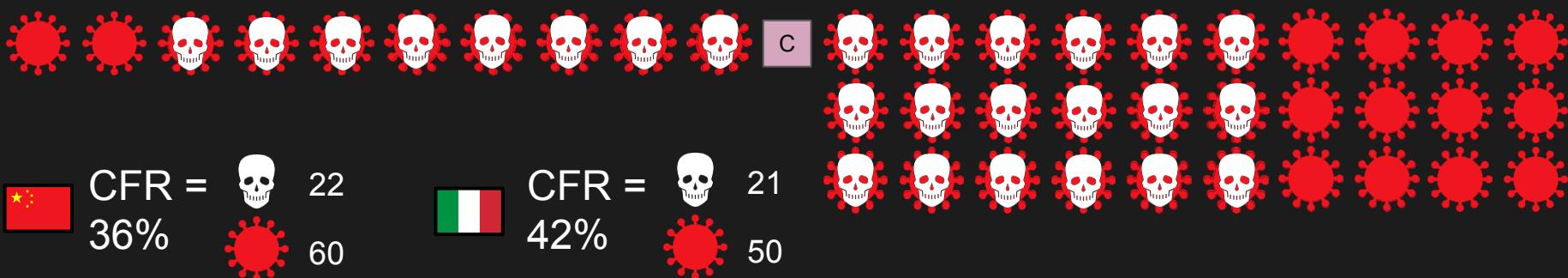
20% VS 10%



40% VS 20%



80% VS 60%



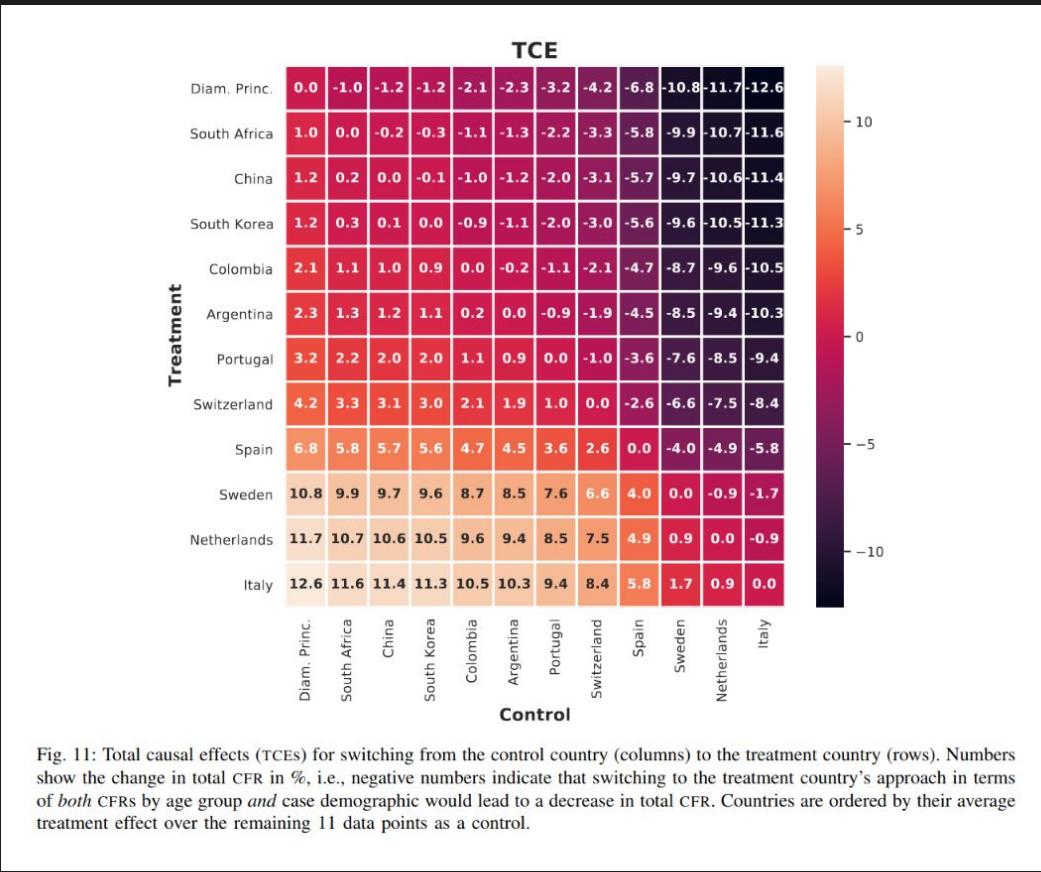


Fig. 11: Total causal effects (TCEs) for switching from the control country (columns) to the treatment country (rows). Numbers show the change in total CFR in %, i.e., negative numbers indicate that switching to the treatment country's approach in terms of *both* CFRs by age group *and* case demographic would lead to a decrease in total CFR. Countries are ordered by their average treatment effect over the remaining 11 data points as a control.



Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.



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Genes, CC-BY 4.0 – Article, April 22, 2020

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jean-pierre CHANGUEK, Zahr Amoura*, Felly Rey*, Makoto Miyata*

Received: 10 January 2020; revised: 10 March 2020; accepted: 22 April 2020

Abstract

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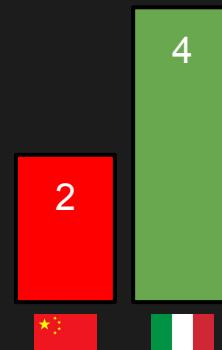
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CFR

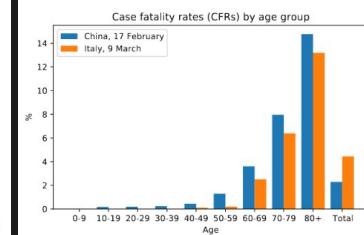
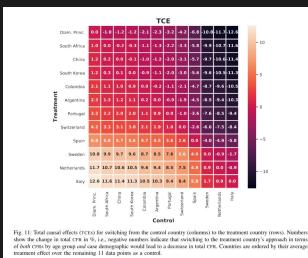
MILANO TODAY

CORONAVIRUS

Coronavirus e fumatori: "Il rischio di finire in terapia intensiva è più del doppio"

L'Unità Operativa di Sanita spiega come tale rischio, rispetto ai positivi al Covid-19 che non fumano, provoca più che raddoppia. Se ne fuma, ce n'è più di mal, è importante

Il punto di confronto (fumatori)



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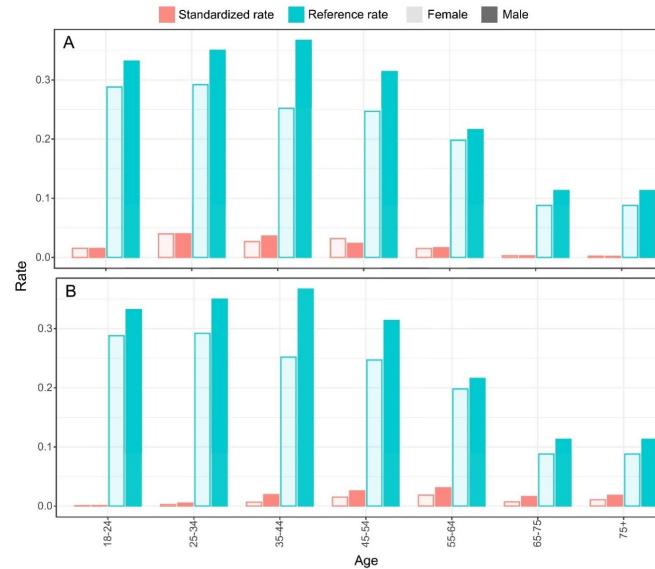
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Les documents internes de l'industrie cigarettière américaine révèlent comment elle a financé ou manipulé des scientifiques français de premier plan pour donner une image positive de la nicotine.

Par David Leloup et Stéphanie Foucart

Publié le 31 mai 2012 à 17h33 - Mis à jour le 07 janvier 2013 à 11h33 • 0 Lecture 13 min.



Édition du jour

Daté du lundi 4 octobre

Lire le journal numérique

« Changeux ! » Le nom, écrit à la main, en grands caractères et suivit d'un point d'exclamation, sonne comme un cri de victoire. Le Post-it sur lequel il est rédigé est collé sur une lettre du grand neurobiologiste français Jean-Pierre Changeux (PDF), datée du 10 août 1994 et à en-tête de l'Institut Pasteur. Elle est adressée au Council for Tobacco Research (CTR), une officine de l'industrie du tabac basée à New York (Etats-Unis) qui finance de la recherche scientifique. Jean-Pierre Changeux demande 255 000 dollars (273 500 euros courants) pour un projet de trois ans afin d'étudier l'impact de la nicotine sur le cerveau de souris mutantes. La missive ainsi annotée est accessible dans l'océan de documents secrets de l'industrie cigarettière – les « tobacco documents » – que *Le Monde* a entrepris de fouiller.

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COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interests.



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GFN 2019

13:00 - 16:30 Kometa

PART 2: Establishing regional networks. What are the benefits and challenges of setting up regional nicotine consumer group networks?

[View Video]

Presenter **Massimo Carusovitro** Italy

Electronic cigarette liquids inhibit pathogenic bacteria growth in [View PDF]

Presenter **Annette Dalrymple** UK

Potential cosmetic and social benefits for e-cigarette and tobacco heating product consumers [View PDF]

Presenter **Mihaila Raescu** Romania

The effect of switching from smoking to other alternative of non-combustible tobacco products on oral health [View PDF]

Presenter **Konstantinos Farsalinos** Greece

Changes from 2017-18 in e-cigarette use and ever having used e-cigarettes according to smoking status and frequency among US adolescents: analysis of the 2017 and 2018 National Survey on Drug Use and Health [View PDF]

14:00 - 15:30 Baltic

Film Festival - Nicotine Around the World



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Presenter **Electronic cigarette liquids inhibit pathogenic bacteria growth in Massimo Caruso** [\[+\] Video](#) [\[+\] PDF](#)
Italy

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Presenter **The effect of switching from smoking to other alternative of non-combustible tobacco products on oral health** [\[+\] PDF](#)
Mihaela Raescu Romania

Presenter **Changes from 2017-18 in e-cigarette use and ever marijuana use in e-cigarettes according to smoking status and frequency among US adolescents: analysis of the 2017 and 2018 National Survey on Drug Use and Health** [\[+\] PDF](#)
Konstantinos Farsalinos Greece

14:00 - 15:30 Baltic [Film Festival - Nicotine Around the World](#)

Conclusions

- Has e-cigarette use increased in 2018 compared to 2017?
 - Yes, in all groups, including never smokers
- Still, frequent and daily e-cigarette use among never smokers is rare
- Compared to never smokers, ever, past 30d and frequent smokers have 10 to 17-fold higher odds of being past 30d e-cigarette users.
- High prevalence of **ever** marijuana use with an e-cigarette
 - About **60%** of **never-smoking** frequent and daily e-cigarette users have ever used marijuana with an e-cigarette
- No difference between 2017 and 2018 in marijuana use with an e-cigarette – the increase in e-cigarette use in 2018 is not attributed to marijuana use
- Questions
 - How many adolescents use e-cigarettes predominantly (or even exclusively) for marijuana use?
 - Unknown, CDC needs to improve the questionnaire design
 - Discussion about flavors may be irrelevant if many never smokers use e-cigarettes for marijuana
 - How does the availability of e-cigarettes affect the prevalence of marijuana use?
 - Is it better for marijuana users to smoke (which is the most popular form of intake) or to vape marijuana?



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Konstantinos Farsalinos Greece

Konstantinos E. Farsalinos, M.D., is a research fellow at the Onassis Cardiac Surgery Center in Athens-Greece, at the Department of Pharmacy, University of Patras-Greece and at the National School of Public Health-Greece. He has been conducting laboratory and clinical research on e-cigarettes as a principal investigator since 2011.

Examples of his work include the first study on the cytotoxic effects of e-cigarette vapor on cultured cells and the immediate effects of e-cigarette use on cardiac function and coronary circulation. As of late 2019, he has published more than 80 studies and articles in international peer-reviewed scientific journals about tobacco harm reduction. He has been recognized as one of the world's most influential researchers of the past decade by Web of Science, receiving the Highly Cited Researcher 2019 recognition.



13-15 June 2019
Marriott Hotel, Warsaw, Poland

GFN 2019

13:00 - 16:30 Kometa		PART 2: Establishing regional networks. What are the benefits and challenges of setting up regional nicotine consumer group networks?	
	Presenter Massimo Caruso Italy		Electronic cigarette liquids inhibit pathogenic bacteria growth in
	Presenter Annette Dalrymple UK		Potential cosmetic and social benefits for e-cigarette and tobacco heating product consumers
	Presenter Mihaila Raescu Romania		The effect of switching from smoking to other alternative of non-combustible tobacco products on oral health
	Presenter Konstantinos Farsalinos Greece		Changes from 2017-18 in e-cigarette use and ever marijuana use in e-cigarettes according to smoking status and frequency of use among US adolescents: analysis of the 2017 and 2018 NTYTS.
14:00 - 15:30 Baltic			
Film Festival: Film Festival - Nicotine Around the World			

Conclusions

- Has e-cigarette use increased in 2018 compared to 2017?
 - Yes, in all groups, including never smokers
- Still, frequent and daily e-cigarette use among never smokers is rare
- Compared to never smokers, ever, past 30d and frequent smokers have 10 to 17-fold higher odds of being past 30d e-cigarette users.
- High prevalence of **ever** marijuana use with an e-cigarette
 - About **60%** of **never-smoking** frequent and daily e-cigarette users have ever used marijuana with an e-cigarette
- No difference between 2017 and 2018 in marijuana use with an e-cigarette – the increase in e-cigarette use in 2018 is not attributed to marijuana use
- Questions
 - How many adolescents use e-cigarettes predominantly (or even exclusively) for marijuana use?
 - Unknown, CDC needs to improve the questionnaire design
 - Discussion about flavors may be irrelevant if many never smokers use e-cigarettes for marijuana
 - How does the availability of e-cigarettes affect the prevalence of marijuana use?
 - Is it better for marijuana users to smoke (which is the most popular form of intake) or to vape marijuana?

RESULTS BY YEAR

Year	Count
2013	1
2014	2
2015	2
2016	1
2017	1
2018	3

[Filters applied: from 1990/1/1 - 2018/1/1. Clear all](#)

[Electronic cigarettes: an aid in smoking cessation, or a new health hazard?](#)

1 **Farsalinos K.**
Cite Ther Adv Respir Dis. 2018 Jan-Dec;12:1753465817744960. doi: 10.1177/1753465817744960. Epub 2017 Dec 7.
Share PMID: 29214890 Free PMC article. Review.

[A critique of the US Surgeon General's conclusions regarding e-cigarette use among youth and young adults in the United States of America.](#)

2 **Polosa R, Russell C, Nitzkin J, Farsalinos KE.**
Cite Harm Reduct J. 2017 Sep 6;14(1):61. doi: 10.1186/s12954-017-0187-5.
Share PMID: 28874159 Free PMC article. Review.
Most of the evidence presented in the Surgeon General's discussion of **nicotine** harm is not applicable to e-cigarette use, because it relies almost exclusively on exposure to **nicotine** in the cigarette smoke and not to **nicotine** present in e-cigarette aer ...

[Nicotine absorption from electronic cigarette use: comparison between first and new-generation devices.](#)

3 **Farsalinos KE, Spyrou A, Tsimopoulou K, Stefanopoulos C, Romagna G, Voudris V.**
Cite Sci Rep. 2014 Feb 26;4:133. doi: 10.1038/srep04133.
Share PMID: 24569565 Free PMC article.
In this study, plasma **nicotine** levels were measured in experienced users using a first- vs. new-generation EC device for 1 hour with an 18 mg/ml **nicotine**-containing liquid. ...The use of 18 mg/ml **nicotine**-concentration liquid probably compromises ECs' effect ...

[Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarette substitutes: a systematic review.](#)

4 **Farsalinos KE, Polosa R.**
Cite Ther Adv Drug Saf. 2014 Apr;5(2):67-86. doi: 10.1177/2042098614524430.
Share PMID: 25083263 Free PMC article. Review.

[Regulation in the face of uncertainty: the evidence on electronic **nicotine** delivery systems \(e-cigarettes\).](#)

5 **Farsalinos KE, Le Houezec J.**
Cite Risk Manag Healthc Policy. 2015 Sep 29;8:157-67. doi: 10.2147/RMHP.S62116. eCollection 2015.
Share PMID: 26457058 Free PMC article. Review.
Effective treatment exist however, few smokers use them and most try to quit by themselves. Most of the tobacco cigarette's toxicity is related to the combustion process. Models of harm reduction applied to tobacco suggest that switching from inhalation of combustible pr ...

[Nicotine absorption from electronic cigarette use: comparison between experienced consumers \(vapers\) and naïve users \(smokers\).](#)

6 **Farsalinos KE, Spyrou A, Stefanopoulos C, Tsimopoulou K, Kourkouti P, Tsipras D, Kyropoulos S, Poulas K, Voudris V.**
Cite Sci Rep. 2015 Jun 17;5:11269. doi: 10.1038/srep11269.
Share PMID: 26082330 Free PMC article.
Nicotine delivery from ECs is potentially important in their efficacy as smoking substitutes. ...Both groups took similar number of puffs, but smokers had average puff duration of 2.3 s compared to 3.5 s in vapers. Even in vapers, plasma **nicotine** level ...

[More on hidden formaldehyde in e-cigarette aerosols.](#)

7 **Nitzkin JL, Farsalinos K, Siegel M.**
Cite N Engl J Med. 2015 Apr 16;372(16):1575. doi: 10.1056/NEJMc1502242.
Share PMID: 25875274 No abstract available.



If I had COVID-19, I want to be treated in China, says WHO official

CGTN



If I had COVID-19,
I want to be treated in China.

□ ▶ ▶ ⏪ ⏩ ⏴ 0:41 / 0:46

Scroll for details

✉ ... 📺 🔍

<https://www.youtube.com/watch?v=4ssmM6hRk5A>



Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.



Q

Genes, CC-BY 4.0 – Article, April 22, 2020

[Open Peer Review on Qeios](#)

A nicotinic hypothesis for Covid-19 with preventive and therapeutic implications

jean-pierre CHANGUEK, Zahr Amoura*, Felly Rey*, Makoto Miyata*

Received: 12 January 2020; Accepted: 20 April 2020

Abstract

SARS-CoV-2 epidemic raises a considerable issue of public health at the planetary scale. There is a pressing urgency to find treatments based upon currently available scientific knowledge. Therefore, we tentatively propose a hypothesis which hopefully could contribute to the search for treatments. In fact, we have collected new epidemiological data which reveal that current smoking status appears to be a protective factor against the infection by SARS-CoV-2 [1]. we hypothesize that the nicotinic acetylcholine receptor (nAChR) plays a key role in the pathophysiology of Covid-19 infection and might represent a target for the prevention and control of Covid-19 infection.

[Editorial](#) > [Toxicol Rep](#), 2020 Apr 30;7:658-663. doi: 10.1016/j.toxrep.2020.04.012.
eCollection 2020.

Editorial: Nicotine and SARS-CoV-2: COVID-19 may be a disease of the nicotinic cholinergic system

Konstantinos Farsalinos^{3,2}, Raymond Nasra³, Jacques Le Houezec¹, Anastasia Barbouni², Aristidis Tatsikas⁴, Dimitris Koureas⁴, Apostolos Vantarakis⁶, Konstantinos Poulas¹

Affiliations + expand

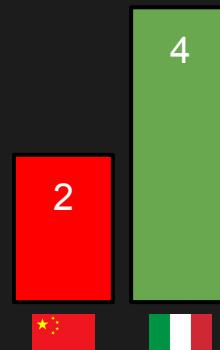
PMID: 32355638 PMCID: PMC7192087 DOI: 10.1016/j.toxrep.2020.04.012

Free PMC article

No abstract available

Conflict of interest statement

The authors declare no conflict of interest.



CFR

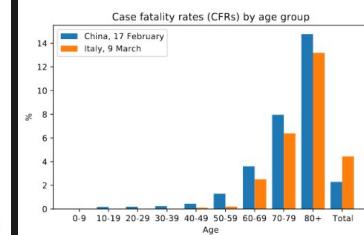
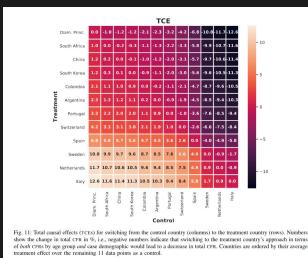
MILANO TODAY

CORONAVIRUS

Coronavirus e fumatori: "Il rischio di finire in terapia intensiva è più del doppio"

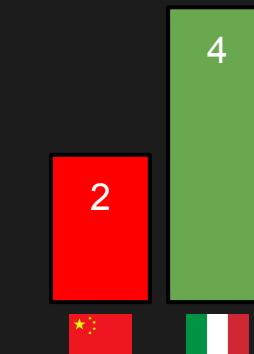
L'Unità Operativa di Sanita spiega come tale rischio, rispetto ai positivi al Covid-19 che non fumano, provoca più che raddoppia. Se ne fuma, ce n'è più di mal, è importante

Il punto di confronto (fumatori)

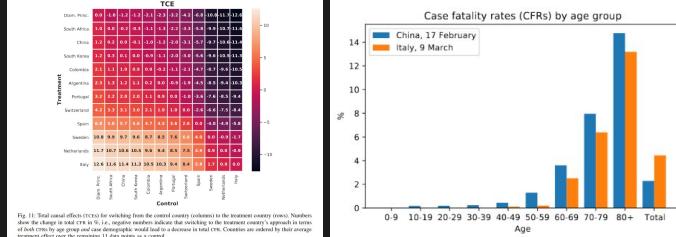
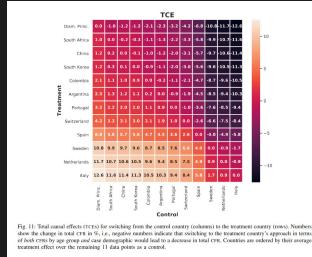




Case fatality rate (CFR) indicates the proportion of confirmed cases which end fatally.



CFR



Prevalence, Severity and Mortality associated with COPD and Smoking in patients with COVID-19: A Rapid Systematic Review and Meta-Analysis

Jaber S. Alqahtani , Tope Oyelade, Abdulelah M. Aldhahir, Saeed M. Alghamdi, Mater Almehmadi, Abdullah S. Alqahtani,

Shumonta Quaderi, Swapna Mandal, John R. Hurst

Published: May 11, 2020 • <https://doi.org/10.1371/journal.pone.0233147>

670 Save	350 Citation
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Feature » Research Integrity

Covid 19: How harm reduction advocates and the tobacco industry capitalised on the pandemic to promote nicotine

BMJ 2021 ; 373 doi: <https://doi.org/10.1136/bmj.n1303> (Published 02 June 2021)

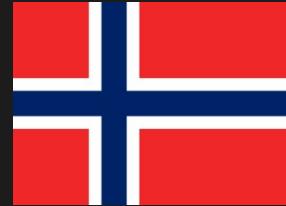
Cite this as: *BMJ* 2021;373:n1303

COVID-19 RESOURCE, GGTC RESOURCES, LIBRARY, POLICY BRIEFS

COVID-19 and Tobacco Industry Interference (2020)

POSTED ON MARCH 24, 2020 BY GGTC

<https://landing.ggtc.world/2020/03/24/covid-19-and-tobacco-industry-interference-2020/>





COVID-19 vaccine booster doses administered per 100 people +deaths

Total number of vaccine booster doses administered, divided by the total population of the country. Booster doses are doses administered beyond those prescribed by the original vaccination protocol.

Our World
In Data

LINEAR LOG

16

14

12

10

8

6

4

2

0

Daily deaths

Booster dose

Jul 1, 2021

Jul 14, 2021

Jul 24, 2021

Aug 3, 2021

Aug 13, 2021

Aug 22, 2021

Source: Official data collated by Our World In Data.

CC BY

► Jul 1, 2021 ○ Aug 22, 2021

CHART

MAP

TABLE

SOURCES

DOWNLOAD





ISRAEL CONFIRMED CASES, JULY 4 TO JULY 31

Age Group	Cases Fully Vaccinated	Cases Unvaccinated	Percent of Cases Fully Vaccinated	Percentage of Population Fully Vaccinated
20–29	2689	795	77.2%	71.9%
30–39	3176	881	78.3%	77.4%
40–49	3303	635	83.9%	80.9%
50–59	2200	359	86.0%	84.4%
60–69	2200	187	92.2%	86.9%
70–79	1384	100	93.3%	92.8%
80–89	540	61	89.9%	91.2%
90+	142	20	87.7%	89.7%
TOTAL	TOTAL	TOTAL	AVERAGE	AVERAGE
20–90+	15634	3038	86.0%	84.4%

Source 1: <https://data.gov.il/dataset/covid-19/resource/9b623a64-f7df-4d0c-9f57-09bd99a88880>

Source 2: <https://datadashboard.health.gov.il/COVID-19/general>



ISRAEL CONFIRMED CASES, JULY 4 TO JULY 18

Sep 18



The Architect. 🇨🇦🇮🇱🌍 @TheMarcitect

Israel is on their fourth dose.

"Covid" cases are the highest in the world. This is not about a virus. If one dose doesn't bring cases down but four doses increases them.. what is really going on?

3:17 PM · Sep 18, 2021

371 3,124 175 7,163

Age Group	Cases Fully Vaccinated	Average
20-90+	15634	86.0%
TOTAL	3038	84.4%
20	89.9%	91.2%
3	87.7%	89.7%
3	92.8%	86.9%

Source 1: <https://data.gov.il/dataset/covid-19/resource/9b623a64-f7df-4d0c-9f57-09bd99a88880>

Source 2: <https://datadashboard.health.gov.il/COVID-19/general>



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Israel struggles with COVID surge despite mass vaccinations

Israelis flouting mask requirements may have been a main contributor to the rapid spread of the Delta variant in Israel, experts say.



The fast spread of the Delta variant caught mostly vaccinated Israelis by surprise [File: Ronen Zvulun/Reuters]

By Orly Halpern

23 Aug 2021





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Forbes

CORONAVIRUS | Aug 11, 2021, 04:15pm EDT

Israel's Recent Surge Confirms We Need A Multimodal Strategy To Fight Covid-19



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Raina MacIntyre for the Conversation

Cases are rising in Israel despite 78% of over-12s being fully jabbed, but that doesn't mean Australia should give up and 'live with' the virus

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WORLD

Israel, World Leader in Vaccine Booster Shots, Hit by Surge in COVID Cases

BY SAMANTHA LOCK ON 9/15/21 AT 8:47 AM EDT



The fast spread of the Delta variant caught mostly vaccinated Israelis by surprise [File: Ronen Zvulun/Reuters]

By Orly Halpern

23 Aug 2021

Forbes

CORONAVIRUS | Aug 11, 2021, 04:15pm EDT

Israel's Recent Surge Confirms We Need A Multimodal Strategy To Fight Covid-19

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THE DEBATE



We Need a Humanitarian Solution to Del Rio
BY MARIA PABON

VS



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U.S. | World | Business

WORLD**Israel, We
Shots, Hi**

BY SAMANTHA LOCK

Israel, Once the Model for Beating Covid, Faces New Surge of Infections

One of the most vaccinated societies, Israel now has one of the highest infection rates in the world, raising questions about the vaccine's efficacy.



A coronavirus isolation ward last week in Sufit, Israel. Infections have more than doubled in the last two weeks. Jalaa Marey/AFP — Getty Images



By Isabel Kershner

Published Aug. 18, 2021 Updated Oct. 3, 2021

Israel's Recent Surge Confirms We Need A Multimodal Strategy To Fight Covid-19

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that can Australia learn from it?
Entyre for the Conversation

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U.S. | World | Business

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A coronavirus isolation ward last week in Safed, Israel. Infections have more than doubled in the last two weeks. Jalaa Marey/AFP — Getty Images



By Isabel Kershner

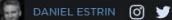
Published Aug. 18, 2021 Updated Oct. 3, 2021

**Goats and Soda** STORIES OF LIFE IN A CHANGING WORLD

Highly Vaccinated Israel Is Seeing A Dramatic Surge In New COVID Cases. Here's Why

August 20, 2021 · 11:01 AM ET
Heard on All Things Considered

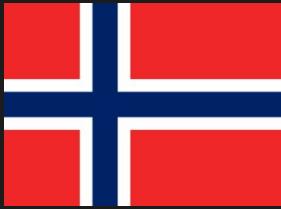
DANIEL ESTRIN



▶ 3-Minute Listen



Medics in Jerusalem transfer a COVID-19 patient to Hadassah Hospital Ein Kerem. Many hospitals in Israel are at full capacity following a sharp increase in coronavirus infections.
Menahem Kahana/AFP via Getty Images



Tidsserie

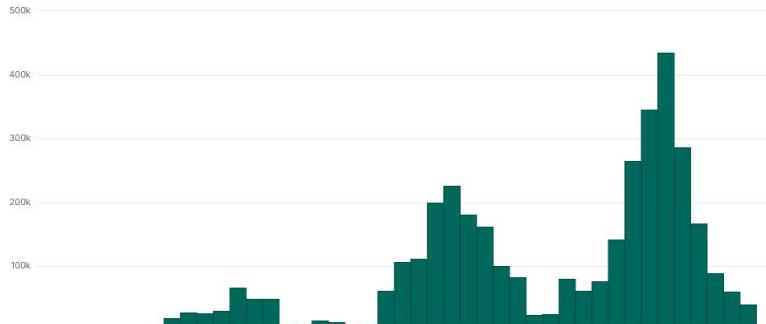
Velg kommune eller fylke i nedtrekksmenyen nedenfor.

Vaksinerte Doser satt Prosent Antall Nye Totalt

Minst én dose Fullvaksinerte Daglig Uketlig Log

Hele landet

Innværende uke



2. des. 2020 → I dag

Detaljer om de registrert smittede

VG henter data for hver kommune direkte fra Meldingssystem for smittsomme sykdommer (MSIS), som oppdateres to ganger i døgnet. Husk at ikke alle testes, det kan være mørketall.

Nye Totalt Daglig Uketlig Registreringsdato Prøvedato

Log

Nye Snitt 7 d.



21. feb. 2020 → I dag

▼ Endring i testkriterier 1 2 3

▼ Hva er forskjellen på registreringsdato og prøvedato?



Spain faces a paradox with its fifth wave: European record in both vaccination and cases

España afronta una paradoja con su quinta ola: récord europeo en vacunación y a la vez en contagios

Lidera el porcentaje de población inmunizada mientras la transmisión sigue disparada: la explosión de casos se deja sentir en la presión asistencial, pero Sanidad recuerda que las vacunas reducen mucho el riesgo de ingresar en un hospital

— La pandemia de los no vacunados: solo el 5% de los contagiados en España tenía la pauta completa

Foto

SALUD PÚBLICA

Mónica Zas Marcos /

Marta Borrás

26 de julio de 2021

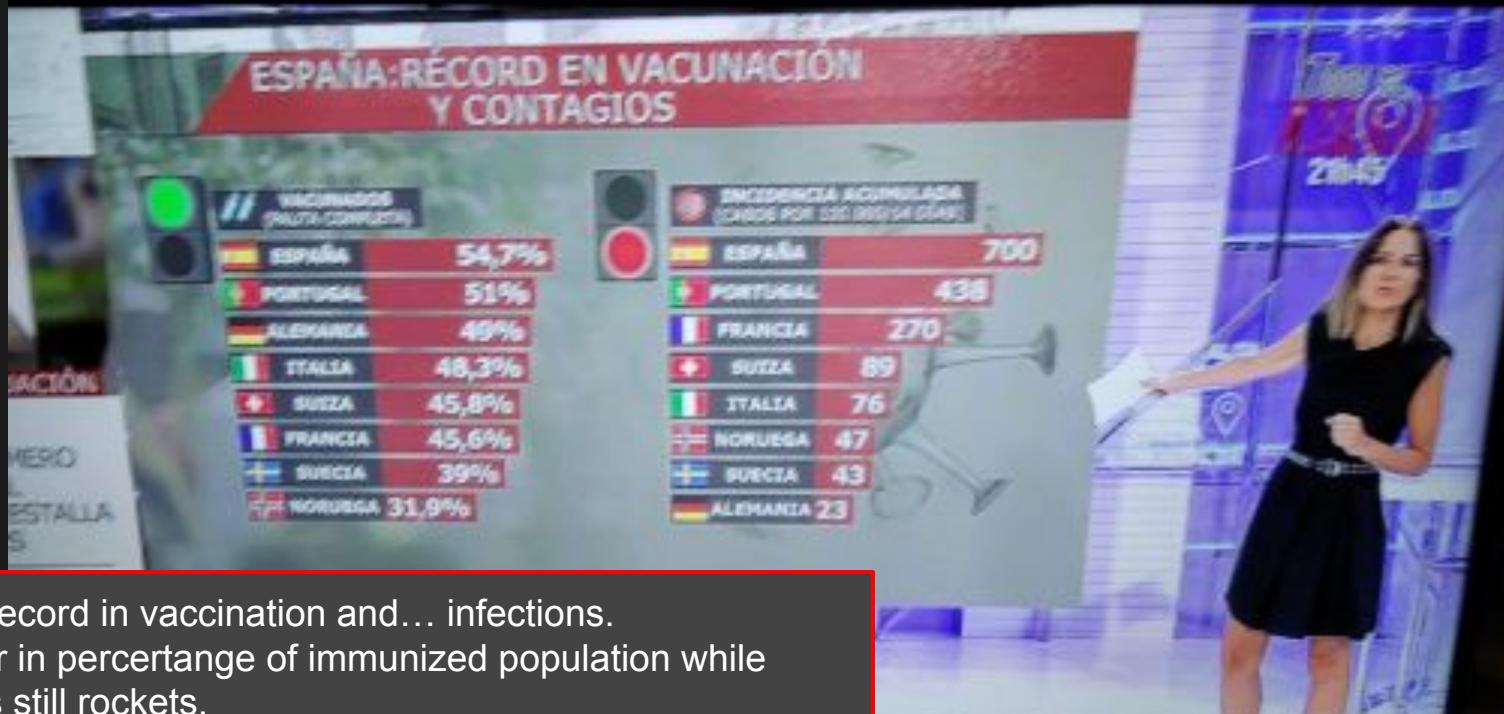
22:14h

39

@MonicaZas

@martaborrás





Spain: European record in vaccination and... infections.
The country leader in percentage of immunized population while
viral transmissions still rockets.



Protecting and improving the nation's health

SARS-CoV-2 variants of concern and variants under investigation in England

Data taken from table 4 published by Public Health England as part of their technical briefing 16, dated 18th June 2021

From the previous table of data, these figures are for the Delta variant	CASES	DEATHS	PERCENT
UNVACCINATED	35521	34	0.095%
VACCINATED	17642	37	0.209%

Infection Fatality Risk is more than DOUBLE in those who are vaccinated



© Karolinska

7 out of 10 corona dead fully vaccinated

Published 11 October 2021 at 16.01

DOMESTIC. As many as 70 percent of those who die during a covid-19 infection in Sweden today are fully vaccinated against the coronavirus, [Svenska Dagbladet](#) reports .

SvD refers to new figures from the Swedish Public Health Agency for the period 1-24.

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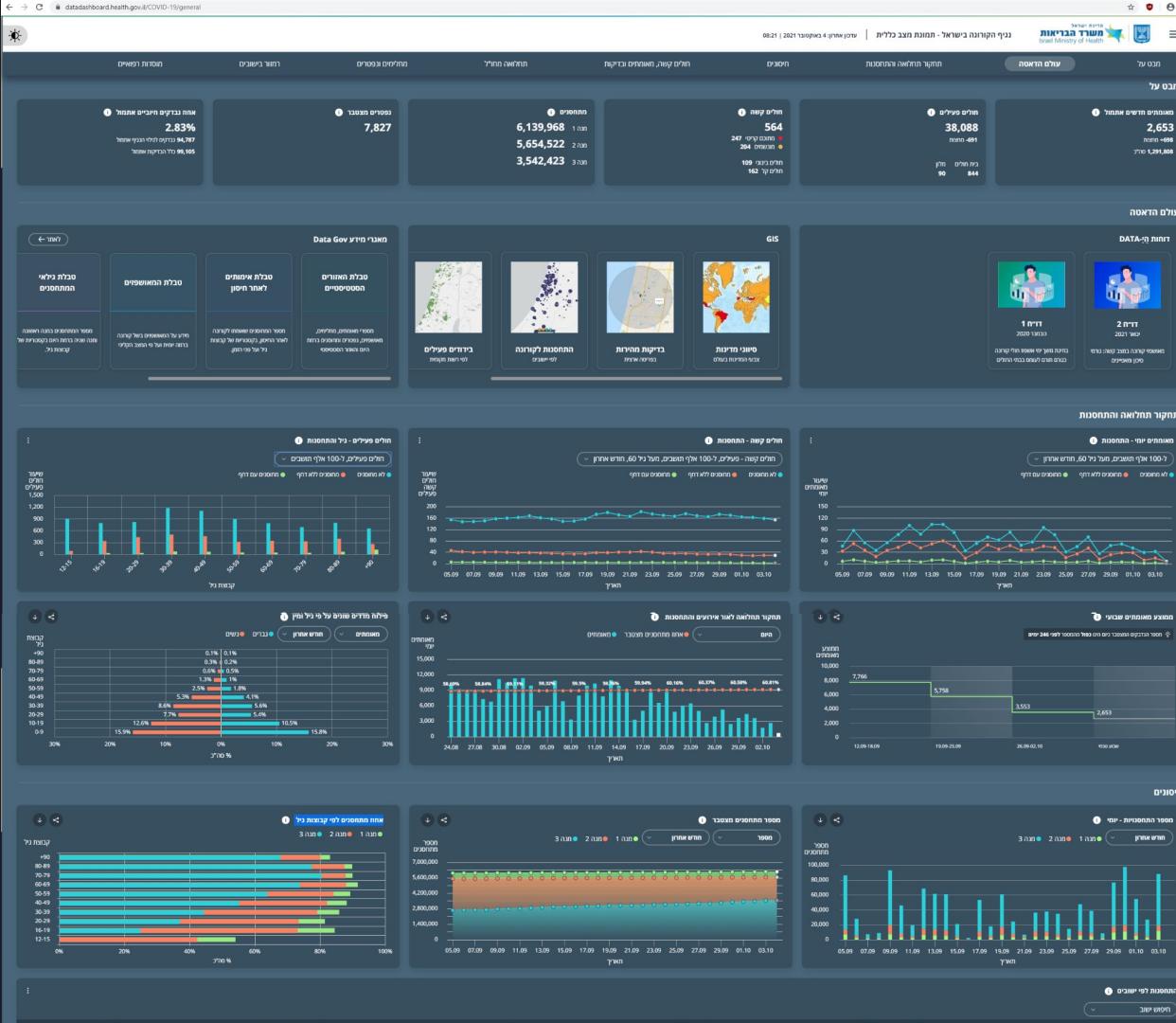


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Source 1: <https://data.gov.il/dataset/covid-19/resource/9b623a64-f7df-4d0c-9f57-09bd99a88880>

Source 2: <https://datadashboard.health.gov.il/COVID-19/general>

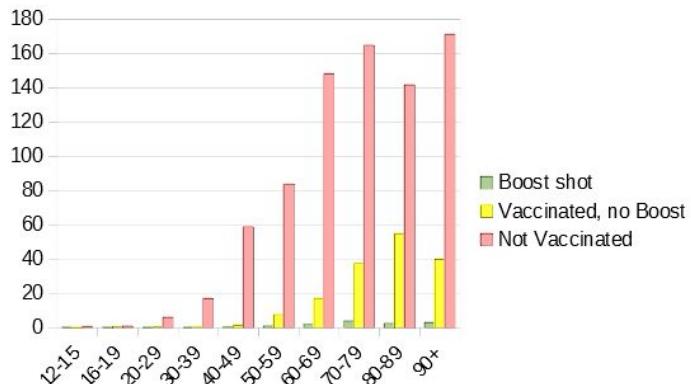
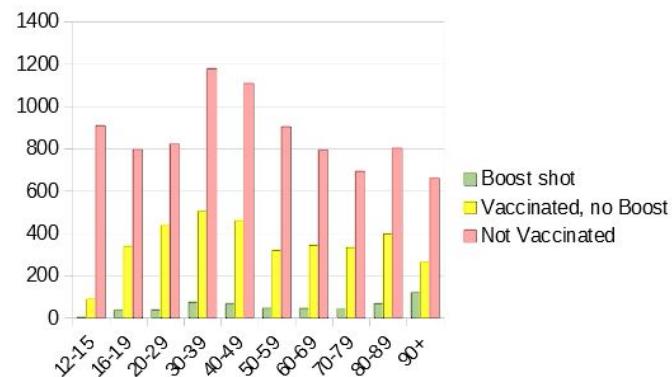


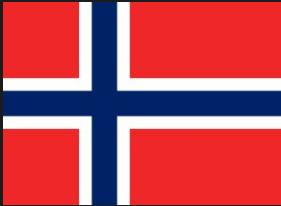


Age Group	Vaccinated	Not Vaccinated	Percent of cases Fully vaccinated	Percent of population Fully vaccinated (≥1)
12-15	273	2398	10.2	42.4
16-19	1021	1066	48.9	73.2
20-29	2832	1983	58.8	73.5
30-39	2981	2036	59.4	79.2
40-49	2138	1472	59.2	82.2
50-59	1009	824	55	84.2
60-69	704	503	58.3	88
70-79	395	303	56.6	87.9
80-89	263	170	60.7	87.5
90+	76	54	58.5	80.1
TOTAL (all)	11692	10809	52	66.03
TOTAL (>20)	10398	7345	58.6	82.8



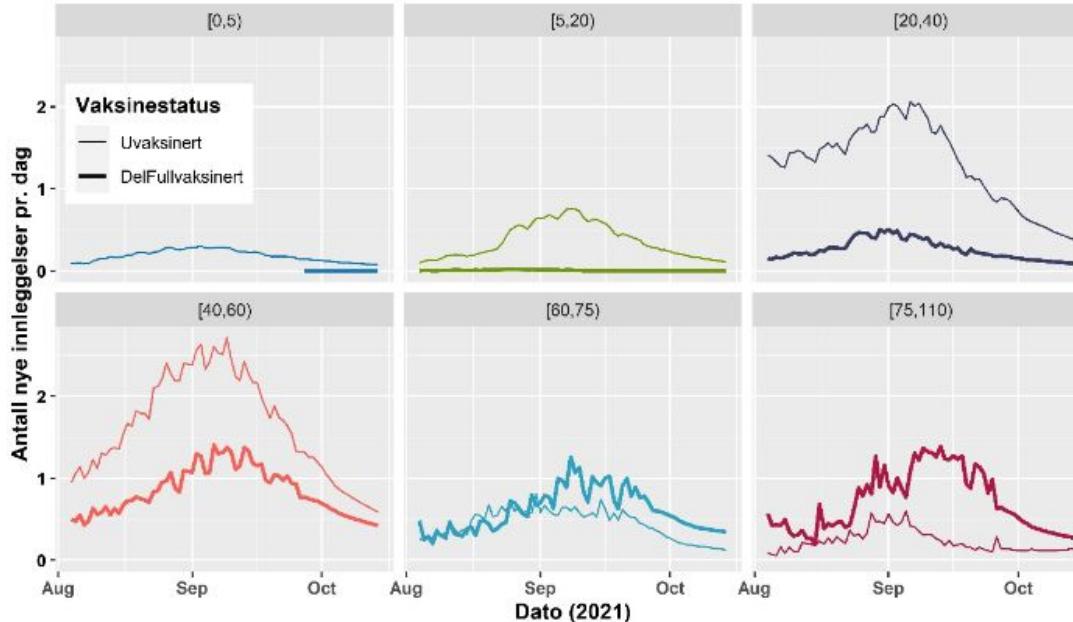
Age Group	Normal Cases			Age Group	Severe Cases			
	Per 100k hospitalizations				Per 100k hospitalizations			
	Boost shot	Vaccinated, no Boost	Not Vaccinated		Boost shot	Vaccinated, no Boost	Not Vaccinated	
12-15	0	88.5	909.1	12-15	0	0	0.4	
16-19	35.2	339.4	796.1	16-19	0	0.3	0.7	
20-29	37.2	436.5	821.6	20-29	0	0.3	5.8	
30-39	73.3	503.7	1178.2	30-39	0	0.2	16.8	
40-49	66.1	460.1	1108.6	40-49	0.2	1.3	58.7	
50-59	45.6	319.3	903.8	50-59	0.8	7.5	83.4	
60-69	44.5	343.4	792.4	60-69	1.7	17	148.1	
70-79	40	332.8	693	70-79	3.7	37.3	164.7	
80-89	66.6	397.5	802.5	80-89	2.3	54.8	141.6	
90+	119	262.7	659.7	90+	2.8	39.8	171	





Figur 37 viser tilsvarende framskrivninger, inndelt etter alder og vaksinasjonsstatus.

Nye sykehusinnleggelser (pr. dag), estimert, etter alder og vaksinestatus



Figur 37. Modellestimeret antall nye innleggelser pr. dag, delt i grupper etter alder og vaksinasjonsstatus, estimert frem t.o.m. 14. oktober 2021. Del- og fullvaksinerte er samlet i én gruppe. Kilde:
BeredtC19/Folkehelseinstituttet.

<https://www.fhi.no/contentassets/8a971e7b0a3c4a06bdbf381ab52e6157/vedleg/g/2021/ukerapport-uke-38-20.09---26.09.21.pdf>





According to repeated nationwide surveys,

More Doctors Smoke CAMELS than any other cigarette!

Doctors in every branch of medicine were asked, "What cigarette do you smoke?" The brand named most was Camel!

You'll enjoy Camel for the same reasons so many doctors smoke them. Camel烟味, cool, delicious; pack after pack, and a flavor unmatched by any other cigarette. Make this sensible way. Smoke only Camel for 30 days and see how well Camel pleases your taste. How well they will please those in your family who smoke. You'll soon experience a cigarette like no!

THE DOCTORS' CHOICE IS AMERICA'S CHOICE!

A vintage Camel cigarette advertisement. It features a portrait of a male doctor in a white coat and tie, smoking a cigarette. Below him is a pack of Camel cigarettes and a single cigarette. To the left of the pack are three small portraits of celebrities: a woman (Audrey Hepburn), a man (Bing Crosby), and another man (John Wayne). The text at the bottom reads: "For 30 days, test Camel in your 'T-Zone' ('T' for Throat, 'T' for Taste)."



Study Doubts That Smoking Causes Smaller Babies

Sandra Blakeslee The New York Times Jan. 15, 1972

The professor, Dr. Jacob Yerushalmy of the child health and development studies unit of the university's School of Public Health at Berkeley, reported his findings in the Jan. 15 issue of *The American Journal of Obstetrics and Gynecology*.

In his report, he states that the tendency for women who smoke to produce low-birth-weight babies [...] is probably not caused by smoking but by biological and behavioral factors within the women.

[...] Dr. Yerushalmy said, but they may point to the hypothesis that there are two inherent types of women—those who produce low-birth-weight babies and those who produce high-birth-weight babies.

The two types, he continued, seem to have different personalities [...] Smokers are more likely to drink coffee, beer and whisky, often in excessive amounts. Smokers also seem to be more neurotic than nonsmokers and to change jobs and spouses more often than do nonsmokers.

Mothers of high-birth-weight babies, on the other hand, tend not to smoke and to be more relaxed, Dr. Yerushalmy said. [...] "In other words, the observed difference in incidence of low birth-weight infants may be due to the smoker, not the smoking."

REFORMULATIONS

On the importance—and the unimportance— of birthweight

Allen J Wilcox

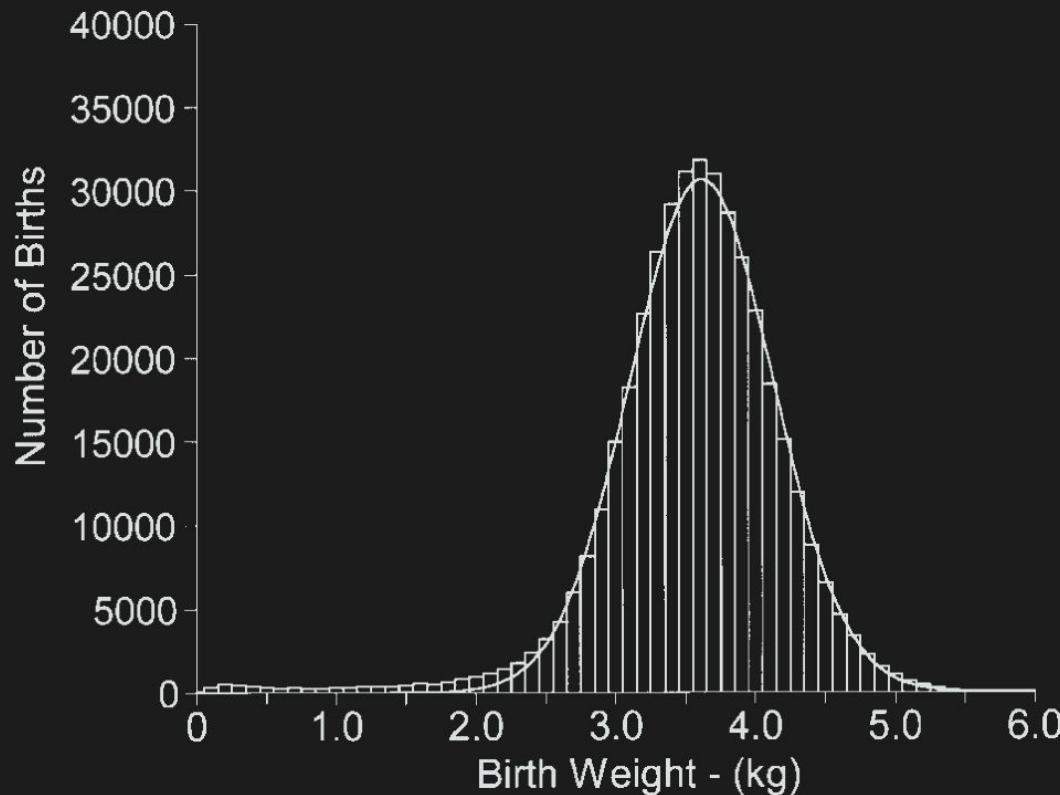


Figure 1 Distribution of birthweights for 405 676 live and still births, Norway, 1992–1998

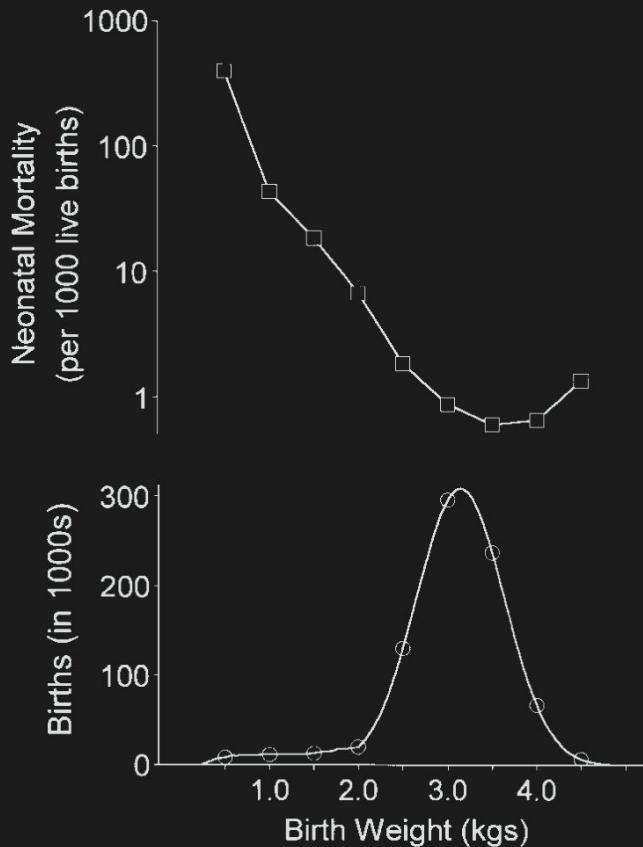
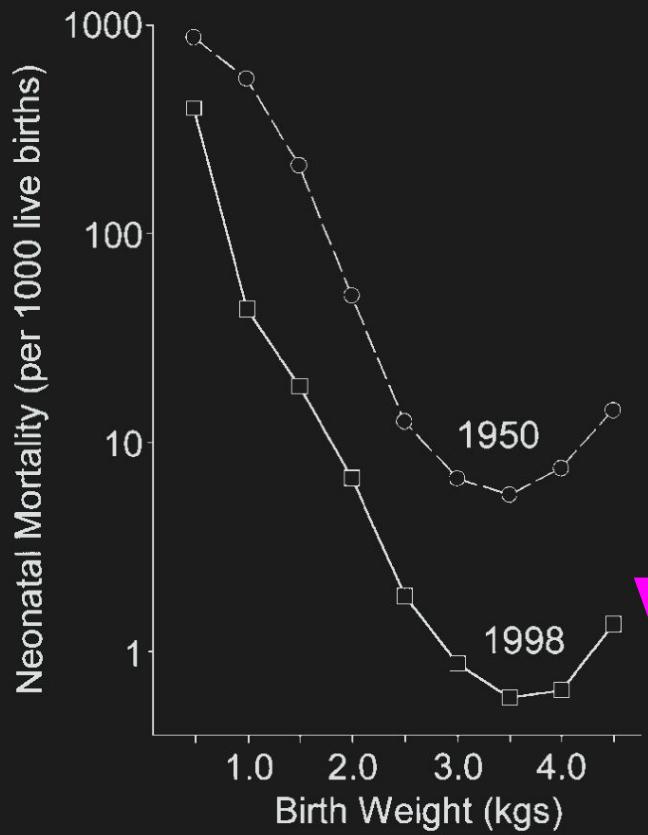
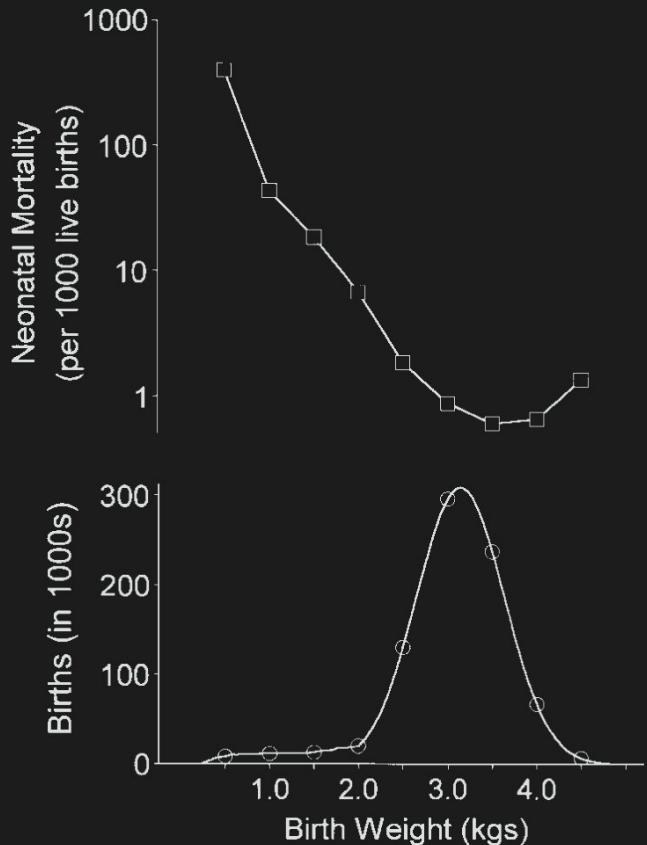


Figure 3 Weight-specific neonatal mortality and the distribution of weights for live births, USA, 1998



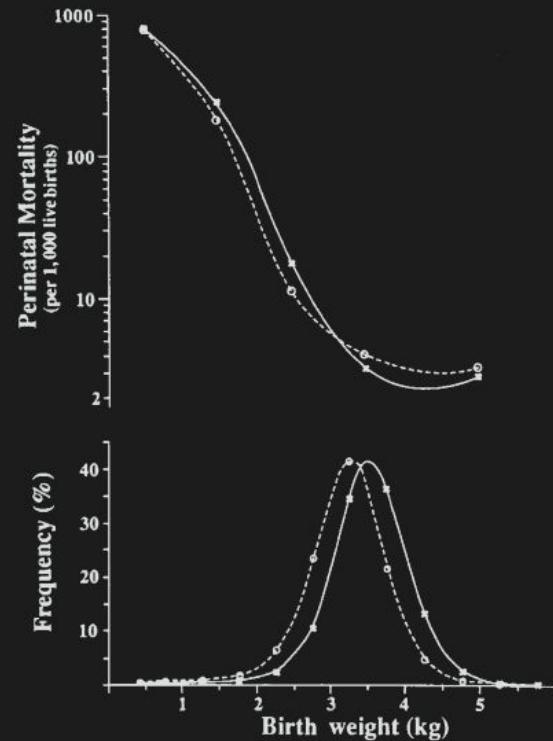


Figure 6 Frequency distribution of birthweight and weight-specific perinatal mortality for infants exposed and unexposed to mothers' smoking: Missouri, 1980–1984. \times — \times , non-smokers; O — O , smokers. (Figure reproduced from *Am J Epidemiol* 1993;137:1098–104, with permission.)

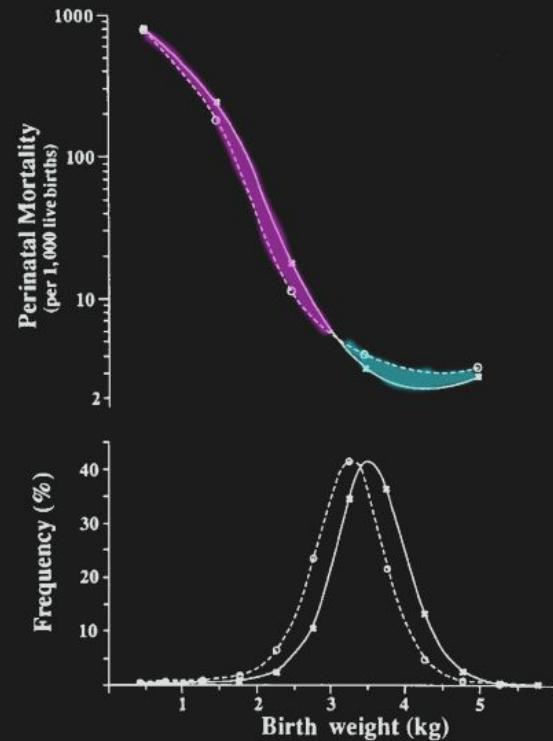


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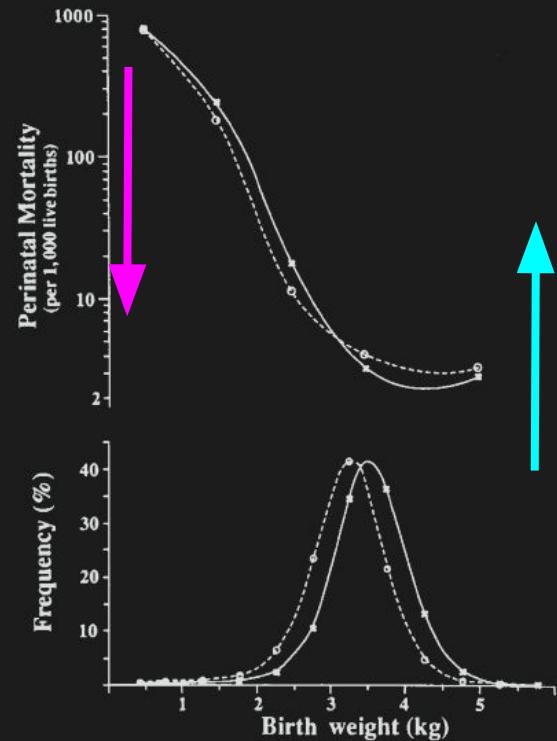


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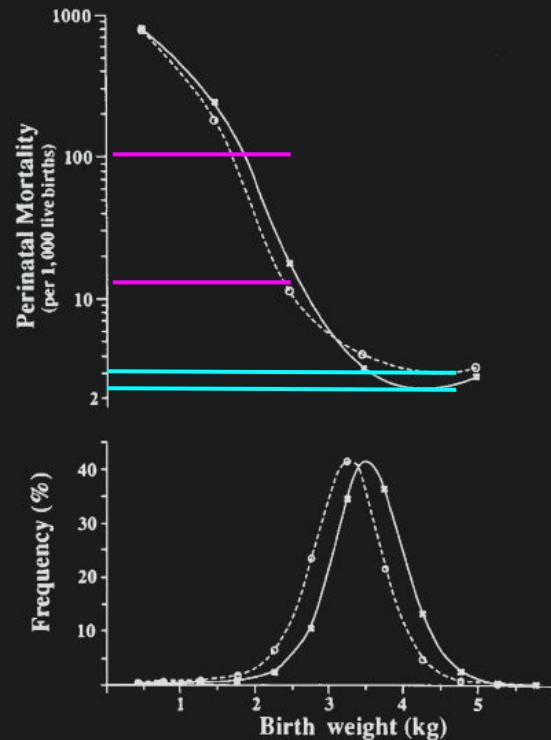


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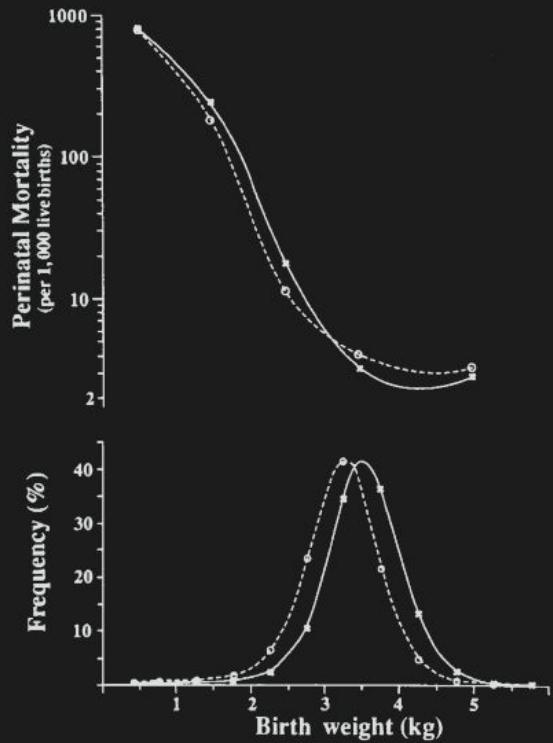


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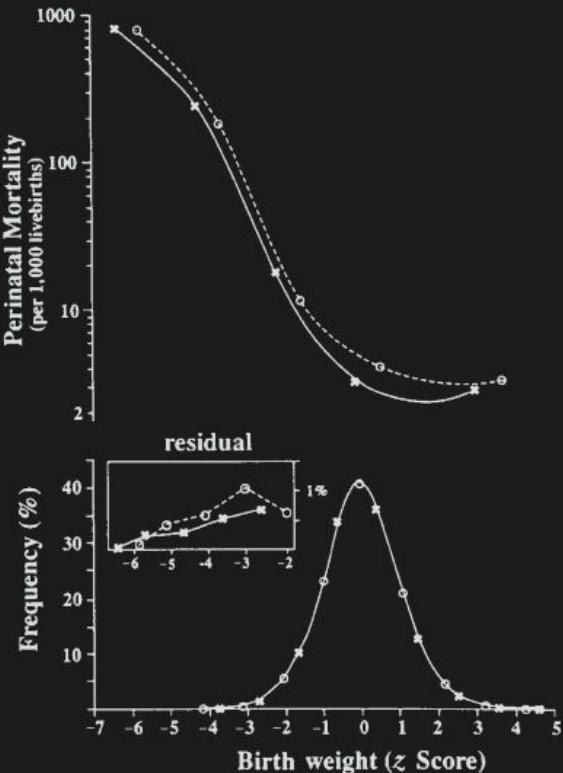
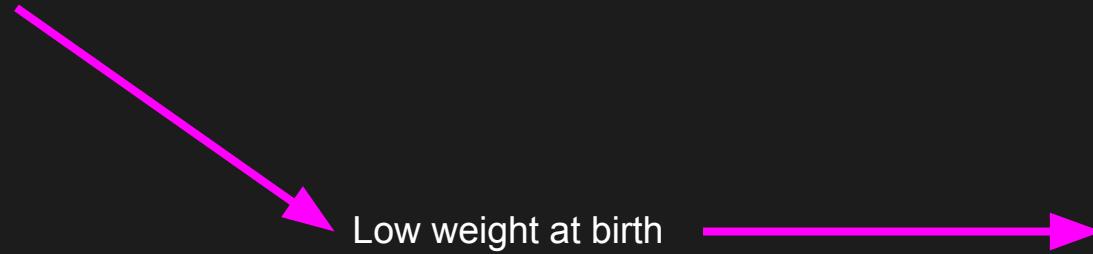


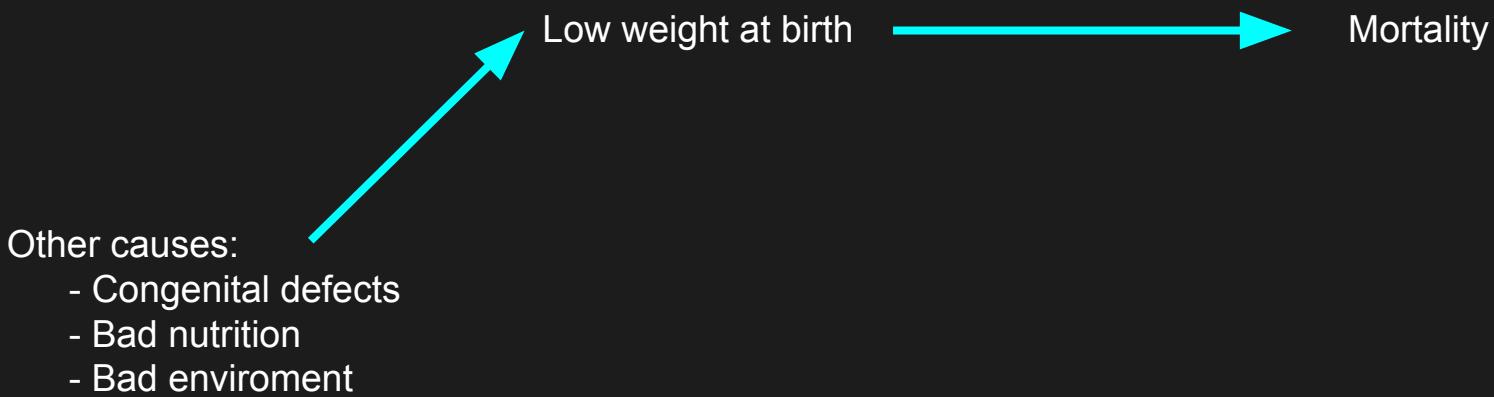
Figure 7 Frequency distribution of birthweight and weight-specific perinatal mortality for infants exposed and unexposed to mothers' smoking, after adjustment to a z scale of birthweight: Missouri, 1980–1984. \times — \times , non-smokers; O — O , smokers. (Figure reproduced from *Am J Epidemiol* 1993;137:1098–104, with permission.)

Smoking

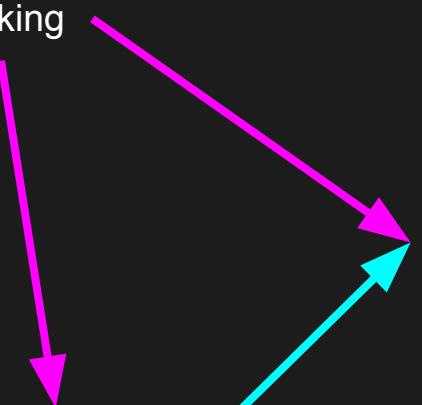
Low weight at birth

Mortality





Smoking



Low weight at birth

Mortality

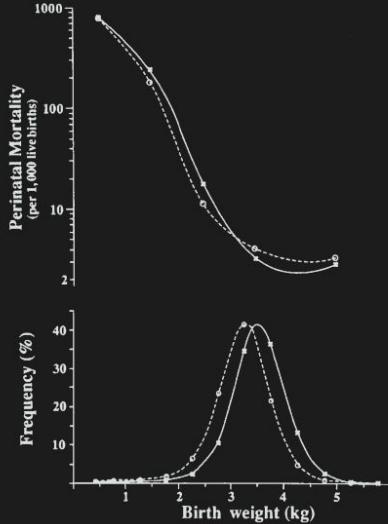
Other causes:

- Congenital defects
- Bad nutrition
- Bad environment

Smoking

Low weight at birth

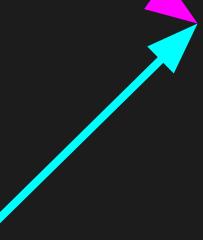
Mortality



Smoking



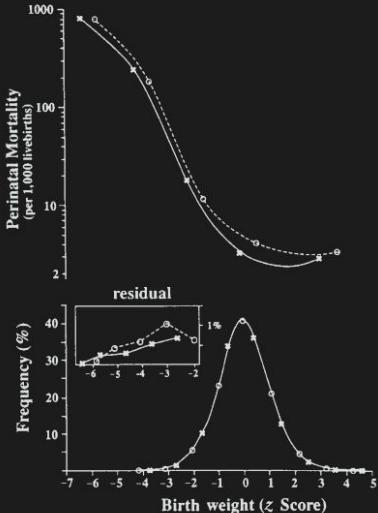
Low weight at birth



Mortality

Other causes:

- Congenital defects
- Bad nutrition
- Bad environment



Mortality rate per 100 cases

Low Weight	Not smoking	Smoking
Healthy	2%	3%
Congenital defect	10%	11%

Normal Weight	Not smoking	Smoking
Healthy	1%	2%
Congenital defect	4%	5%

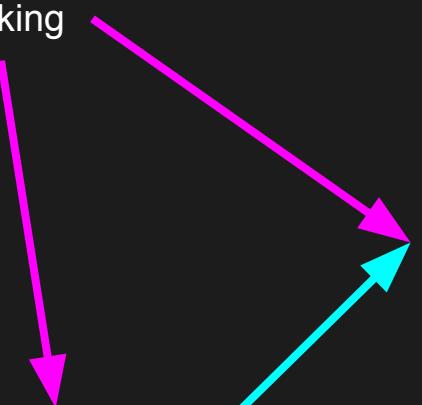
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Low weight at birth

Mortality

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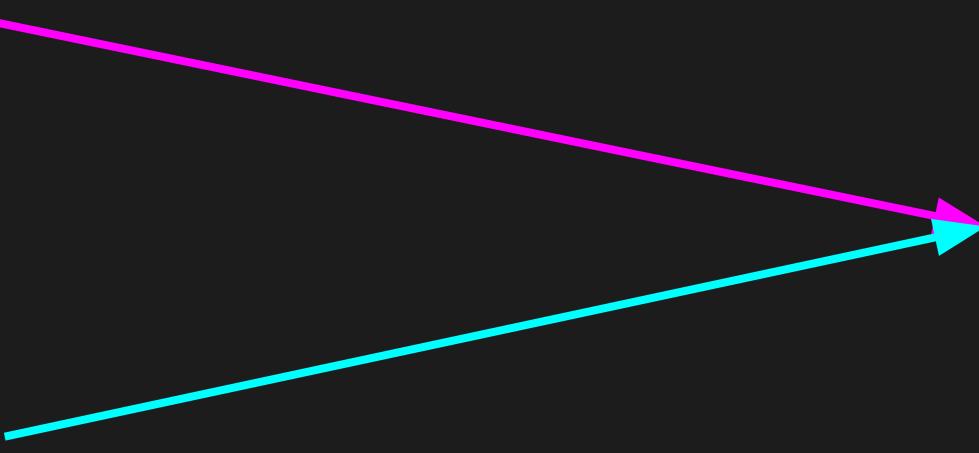
Smoking



Mortality

Other causes:

- Congenital defects
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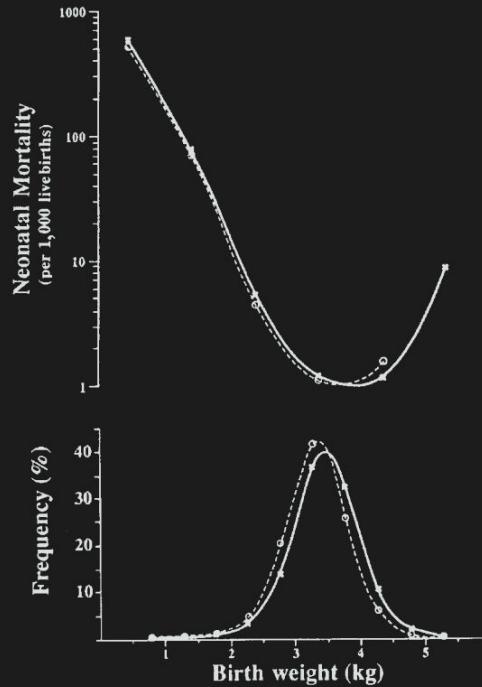


Figure 4 Frequency distribution of birthweight and weight-specific neonatal mortality for Colorado and the United States, 1984. \times — \times , United States; O — O , Colorado. (Figure reproduced from *Am J Epidemiol* 1993;137:1098–104, with permission.)

Colorado: Lower weight, no difference in mortality

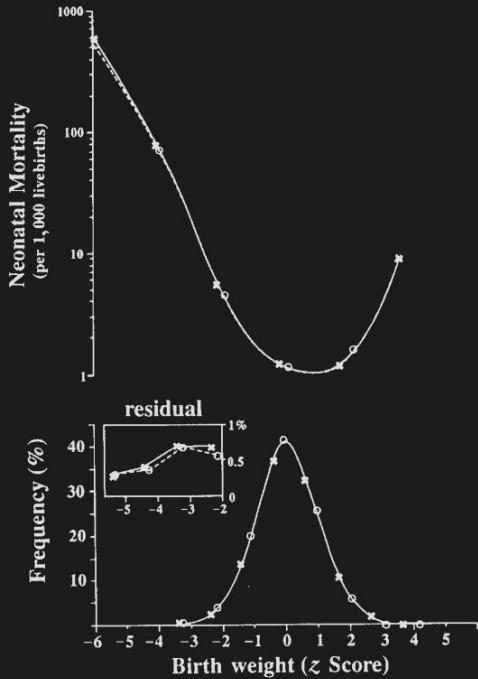


Figure 5 Frequency distribution of birthweight and weight-specific neonatal mortality for Colorado and the United States, 1984, after adjustment to a z scale of birthweight. \times — \times , United States; O — O , Colorado. (Figure reproduced from *Am J Epidemiol* 1993;137:1098–104, with permission.)

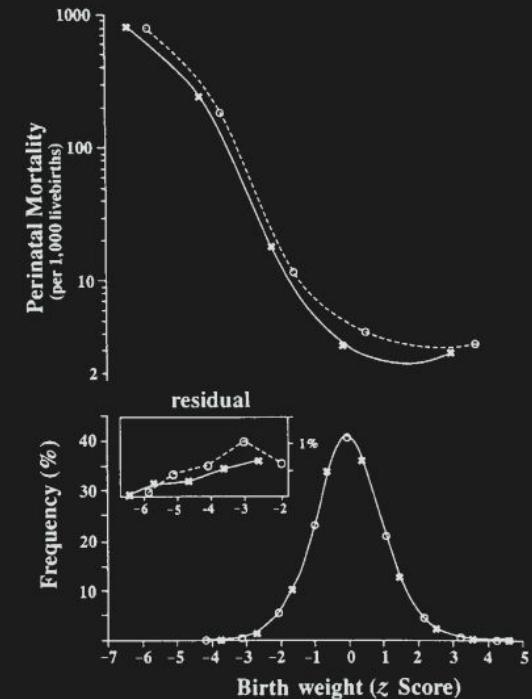


Figure 7 Frequency distribution of birthweight and weight-specific perinatal mortality for infants exposed and unexposed to mothers' smoking, after adjustment to a z scale of birthweight: Missouri, 1980–1984. \times — \times , non-smokers; O — O , smokers. (Figure reproduced from *Am J Epidemiol* 1993;137:1098–104, with permission.)

Smokers: Lower weight, increase mortality



PROSECUTOR FALLACY

‘Small numbers, big mistakes’



Sally Clark



Sally Clark

First son: September 1996 - December 1996





Sally Clark

First son: September 1996 - December 1996

Second son: November 1997 - January 1998



Sally Clark

First son: September 1996 - December 1996

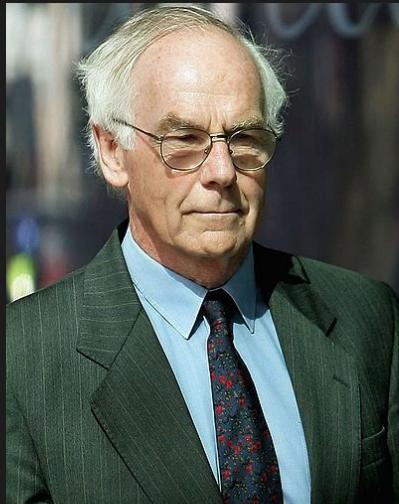
Second son: November 1997 - January 1998

Arrested: February 1998





Sally Clark

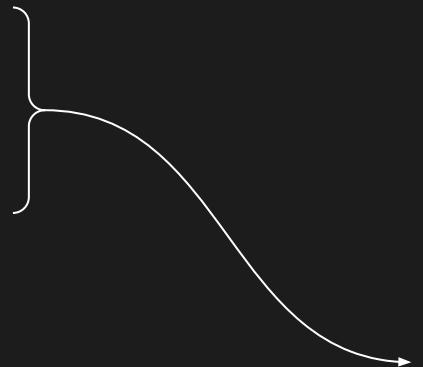


Roy Meadow
"Britain's most eminent paediatrician"

First son: September 1996 - December 1996

Second son: November 1997 - January 1998

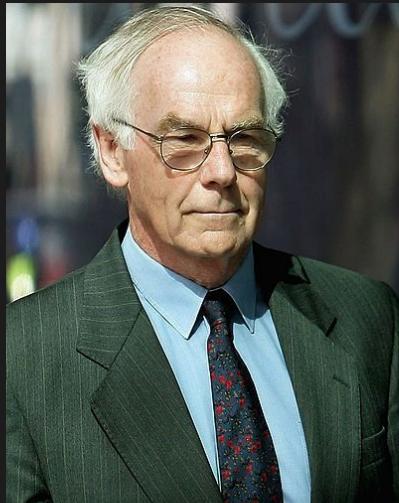
Arrested: February 1998



Impossible!
1 over 73 million chance



Sally Clark



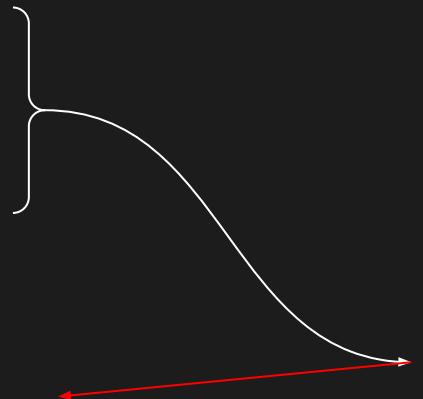
Roy Meadow
"Britain's most eminent paediatrician"

First son: September 1996 - December 1996

Second son: November 1997 - January 1998

Arrested: February 1998

Trial: October 1999 - November 1999.
Sentenced to life in prison.



Impossible!
1 over 73 million chance



Sally Clark

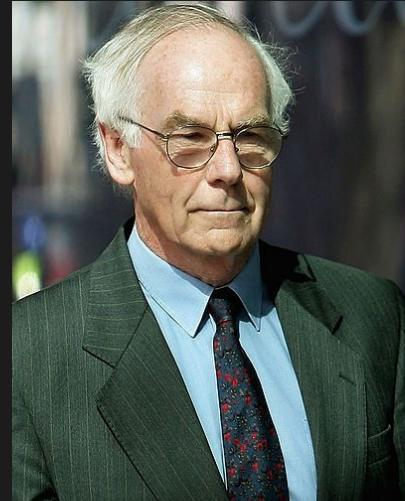
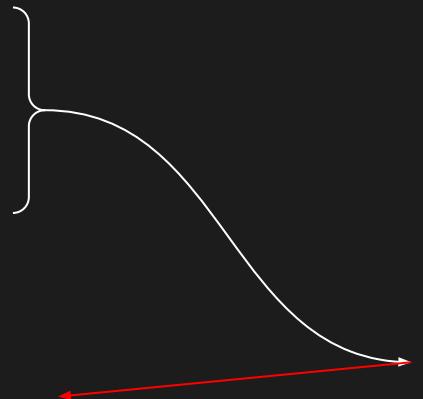
First son: September 1996 - December 1996

Second son: November 1997 - January 1998

Arrested: February 1998

Trial: October 1999 - November 1999.
Sentenced to life in prison.

2nd Appeal: Free in January 2003

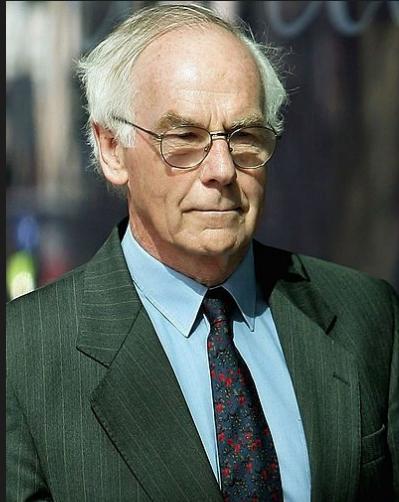


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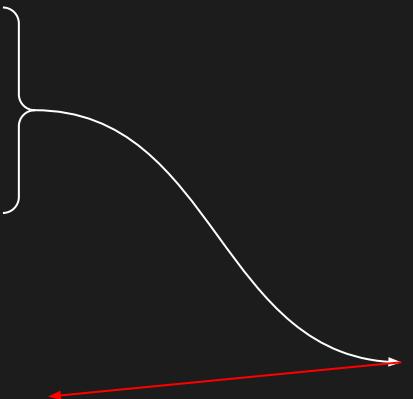
Second son: November 1997 - January 1998

Arrested: February 1998

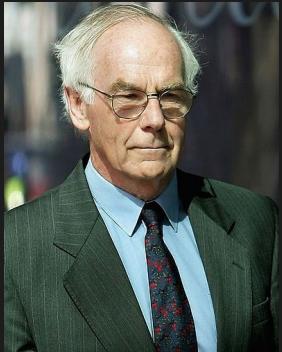
Trial: October 1999 - November 1999.
Sentenced to life in prison.

2nd Appeal: Free in January 2003

Death: March 2007 from acute alcohol intoxication



Impossible!
1 over 73 million chance

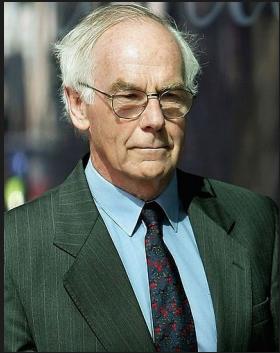


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"Britain's most eminent paediatrician"

$$P(\text{SIDS}) = 1 / 1300$$

$$P(\text{SIDS} | \text{wealthy non smoker family}) = 1 / 8500$$

$$P(\text{SIDS} \times 2) = P(\text{SIDS}) * P(\text{SIDS}) = 1 / 8500^2 \approx 1 / 72.000.000 \text{ (1 family every 100 years!)}$$



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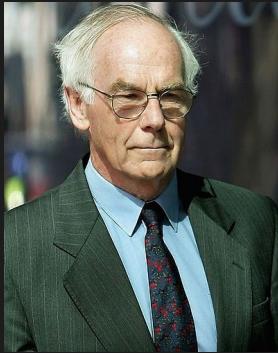
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1st Mistake: SIDS is not independent event, there are genetical, environmental, and other factors that both sibbling share.

$$P(\text{SIDS} | \text{wealthy non smoker family}) = 1 / 8500$$

$$P(\text{SIDS} | \text{Sibbling has SIDS}) = 1 / 100$$

$$P(\text{SIDS} \times 2) = P(\text{SIDS}) * P(\text{SIDS} | \text{Sibling SIDS}) \approx 1 / 850000 \text{ (5 families per year)}$$



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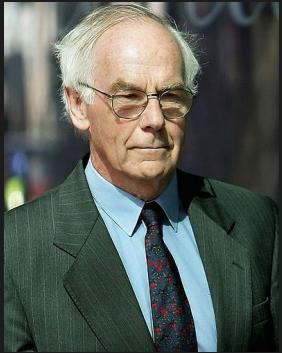
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2nd Mistake: Two SIDS are weird with respect general population, yes. But so it is double infanticide respect general population. They never compared the real ratio of chances of double infanticide vs chances of double SIDS.

$$P(\text{Dead from congenital disease in UK}) = 0.25, P(\text{Dead from injuries in UK}) = 0.08$$



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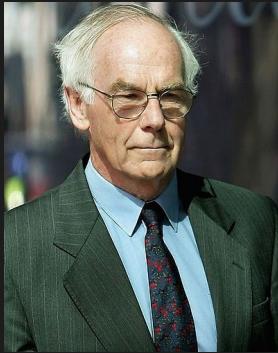
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$$P(\text{SIDS} \times 2) = P(\text{SIDS}) * P(\text{SIDS}) = 1 / 8500^2 \approx 1 / 72.000.000 \text{ (1 family every 100 years!)}$$

3rd Mistake: Assuming that is either double murder or double SIDS

$$P(\text{Either child murder while the other SIDS}) = ?$$

$$P(\text{Any other outcome (ie: other diseases)}) = ?$$



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[BMJ](#). 2003 Feb 8; 326(7384): 304.
doi: [10.1136/bmj.326.7384.304](https://doi.org/10.1136/bmj.326.7384.304)

PMCID: PMC1125181
PMID: [12574040](#)

Sally Clark freed after appeal court quashes her convictions

[Clare Dyer](#), legal correspondent

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2nd son died of Staph infection



Sally Clark with her husband, Stephen. Tests showed that *Staphylococcus aureus* was present in the body of her second son



Sally Clark

First son: September 1996 - December 1996

Second son: November 1997 - January 1998

Arrested: February 1998

Trial: October 1999 - November 1999.
Sentenced to life in prison.

2nd Appeal: Free in January 2003

Death: March 2007 from acute alcohol intoxication

Final Conclusions: Statistics sucks!

The End



There are allegedly around 6.5 million Finns, right? That's out of a 7.125 billion humans. That means Finns make up .0912% of the planet.

That's not 9%—that's point zero nine percent, less than a percent, less than a tenth of a percent.

To put that another way, 99.9% of the planet are not Finns. How do we know this? Government censuses.

Now, the best government censuses have a margin of error of at least 1%. So Finns make up .0912% of the planet, plus or minus one percent.

In conclusion: there is a 50/50 chance Finland doesn't exist.