

Data Visualization Workshop

How to turn data into stories

Alice Kohli

Neue Zürcher Zeitung

@alicekohli

Benjamin Wiederkehr

Interactive Things

@datavis

NZZ Data

nzz.ch/aktuell/data

@nzzdata

8. MÄRZ

Neue Zürcher Zeitung

TEILEN

KEINE ZEIT FÜR WUT

Vier Schicksale zwei Jahre nach «Fukushima»

Nach der Dreifachkatastrophe im Nordosten Japans 2011 berichtete die NZZ aus Fukushima und dem Fischerort Ofunato. Zwei Jahre später haben wir die Betroffenen erneut besucht – und sind auf einen Bauern gestossen, der im Sperrgebiet ausharrt.

Marcel Gyr (Text) Christoph Bangert (Bild)



Outlining the
Concept





一時停止

通行制限中
この先
帰還困難区域につき
通行止め
【024-521-7839】
原子力災害現地対策本部

Die Reise beginnt... in Japan: Marcel Gyr, Christoph Bangert und Mitsuhiro Shoji



Die Reise beginnt... in Zürich: Sylke Gruhnwald, Peter Gassner, Martina Franzén, Flavio Gortana, Benjamin Wiederkehr

TOPICS

PEOPLE

RADIATION

PRECAUTION MEASURES

RADIATION

RADIATION DUMPS

CONTAMINATED FOOD

CONTAMINATION

EMOTION

PSYCHIATRIC SPITEX

DESPERATION (NOT FOUND)

- Social activism
- Political aspects of citizens

FARMER

FISHERMAN

- How businesses have been affected
- Contaminated

- Evacuation
- precaution measurements
- contaminated grounds

SCHOOL PRINCIPLE

FAMILY

TAXI DRIVER

- Evacuation
- Unemployment

MILK MAN

NURSE (for school trip)

- Standard of living changes
- contaminated soil, food for cattle

- Taking care of the elderly
- unselfish acts



Special Business Plan

Handwritten red text: 2012. 10. 10. 10. 10. 10.

May 2012
... in accordance with the Nuclear Damage Liability Fund and TEPCO, and has been

Handwritten red text on a yellow sticky note: 2012

Handwritten red text on a yellow sticky note: 2012

Handwritten red text on a yellow sticky note: 2012

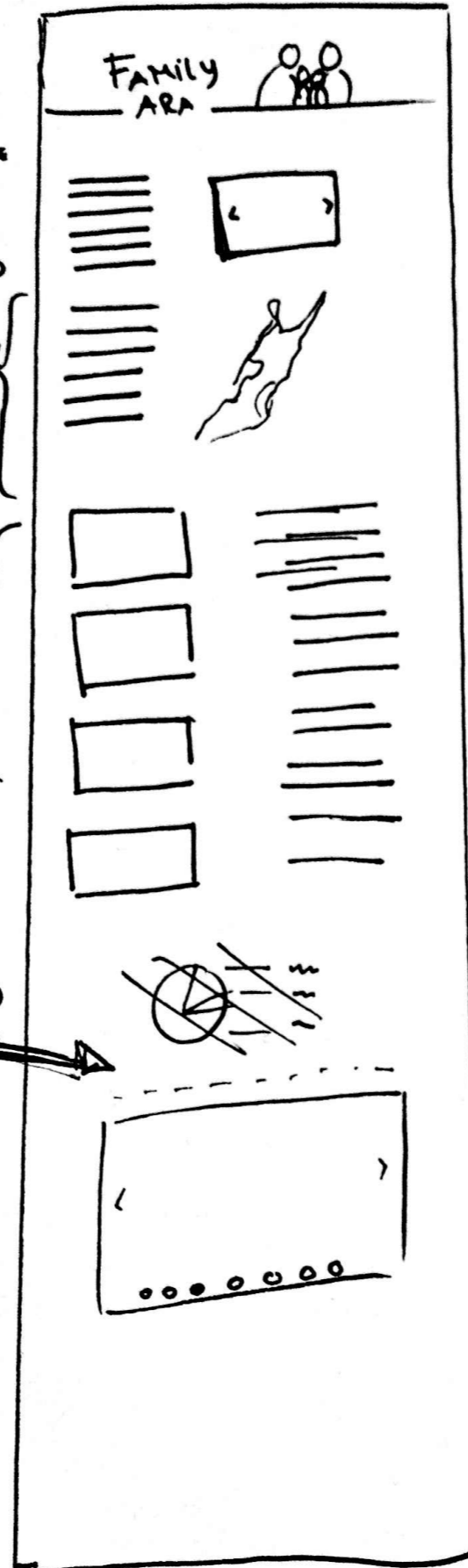
Partially displayed content

CHAPTER 1



Text and other content appear when scrolling

Grand finale of that chapter



LAST TIME THEY MET WAS 2011
WHAT HAPPENED THEN?
Evacuation

2 years later

VIDEO

2011
Slideshow 5 (pics)

VISUALIZATION OF THE EVACUATION

Football cup, EMPLOYMENT

~~THE EMPLOYMENT SITUATION~~
vis.

SLIDESHOW OF ~~THE~~ MINAMISOMA WHERE THE FAMILY USED TO LIVE

Creating the
Visualizations

Government Responsibility
Farmer who stays in Abaco - 2011
Visualization of Social benefits used by the people
Government helping information from the people

8.5
script outputs

Mark
E

RECORD
TAKING

Comparing spatial forest data to evacuation area

300
fishing

Comparison between 2002 / 2003 based for food production

34 900

2003

Comparison data source

Visualizing data through an ongoing motion

100	100
200	200
300	300
400	400
500	500
600	600
700	700
800	800
900	900
1000	1000

Ecology

Ecology

1005 ?

Missing, are only
numbers
applied

RLP / SET RLP

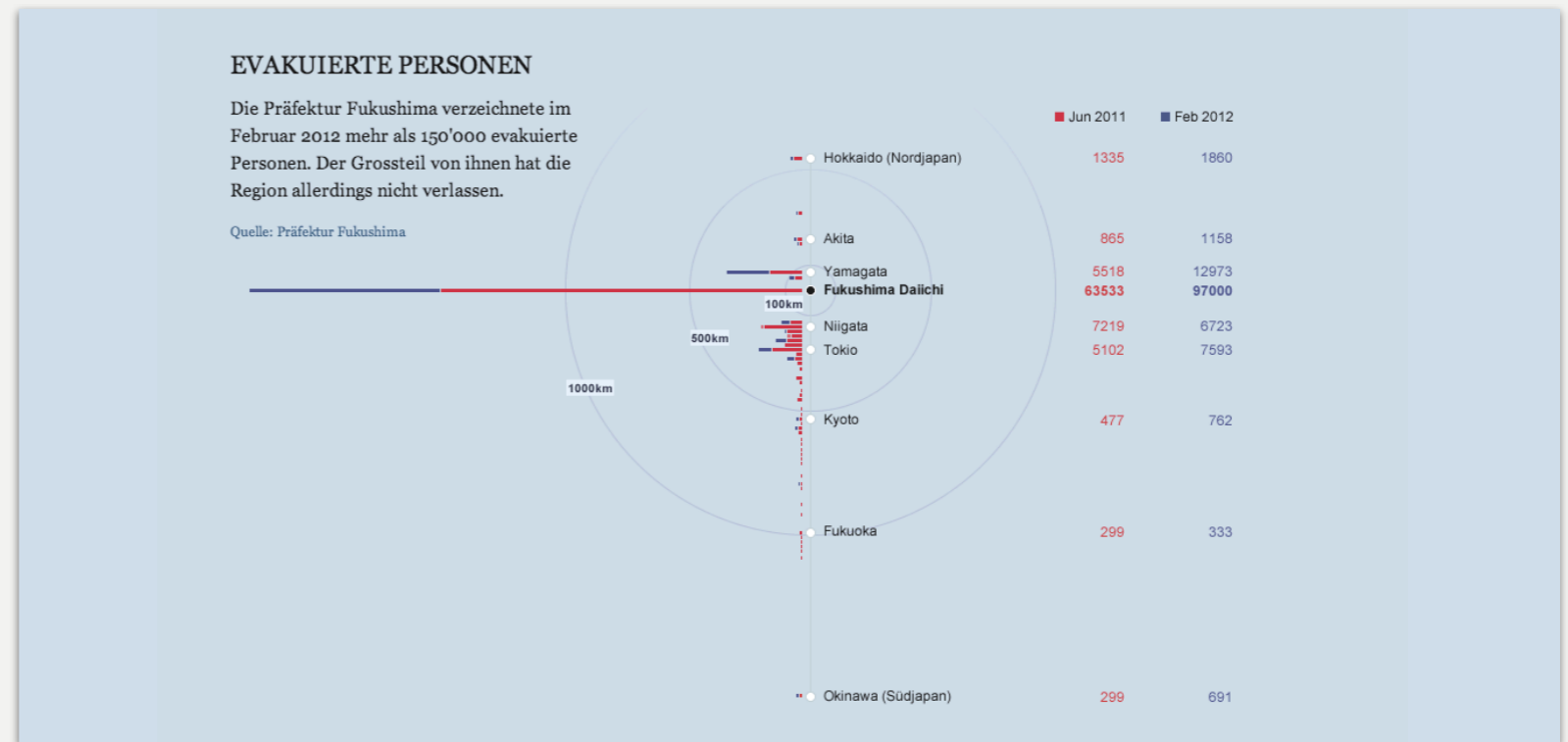
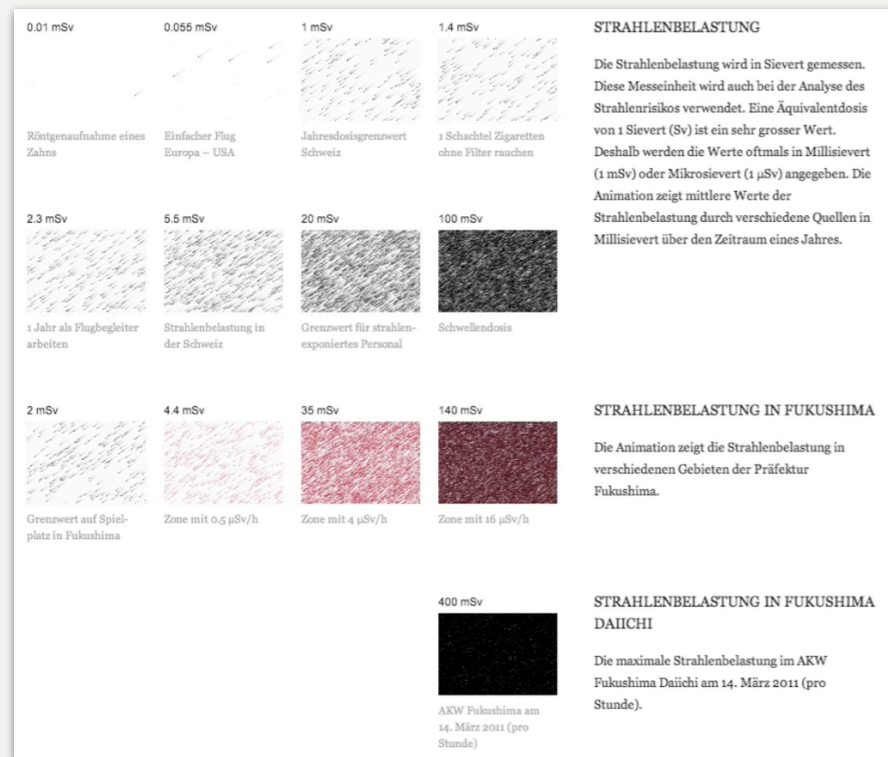
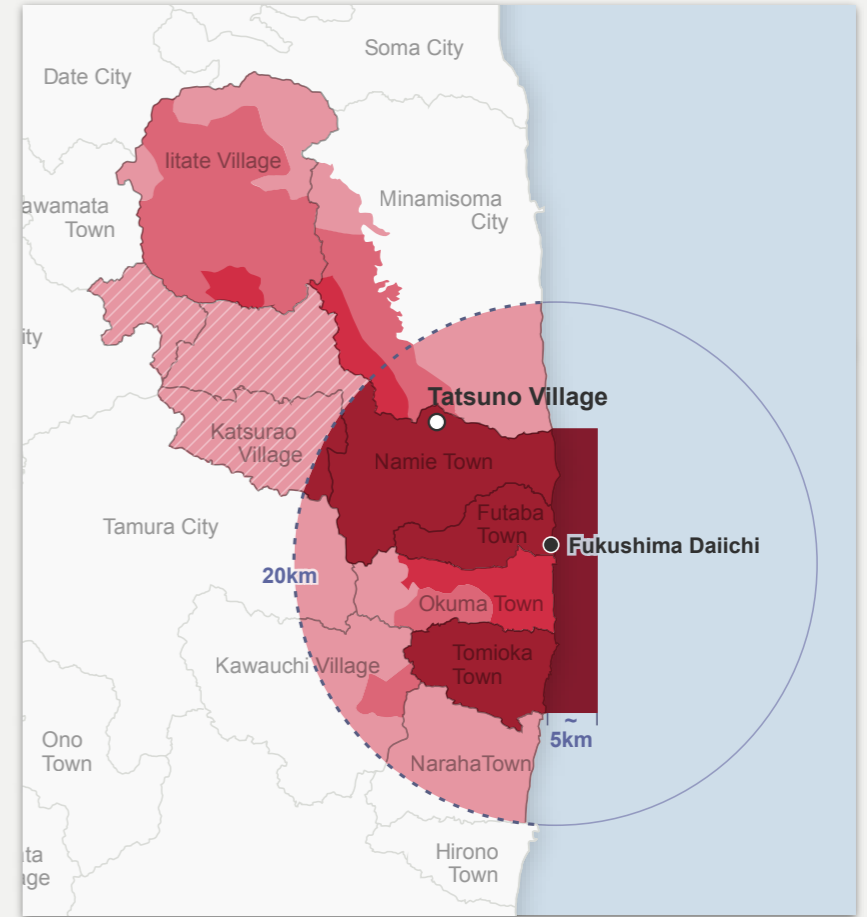
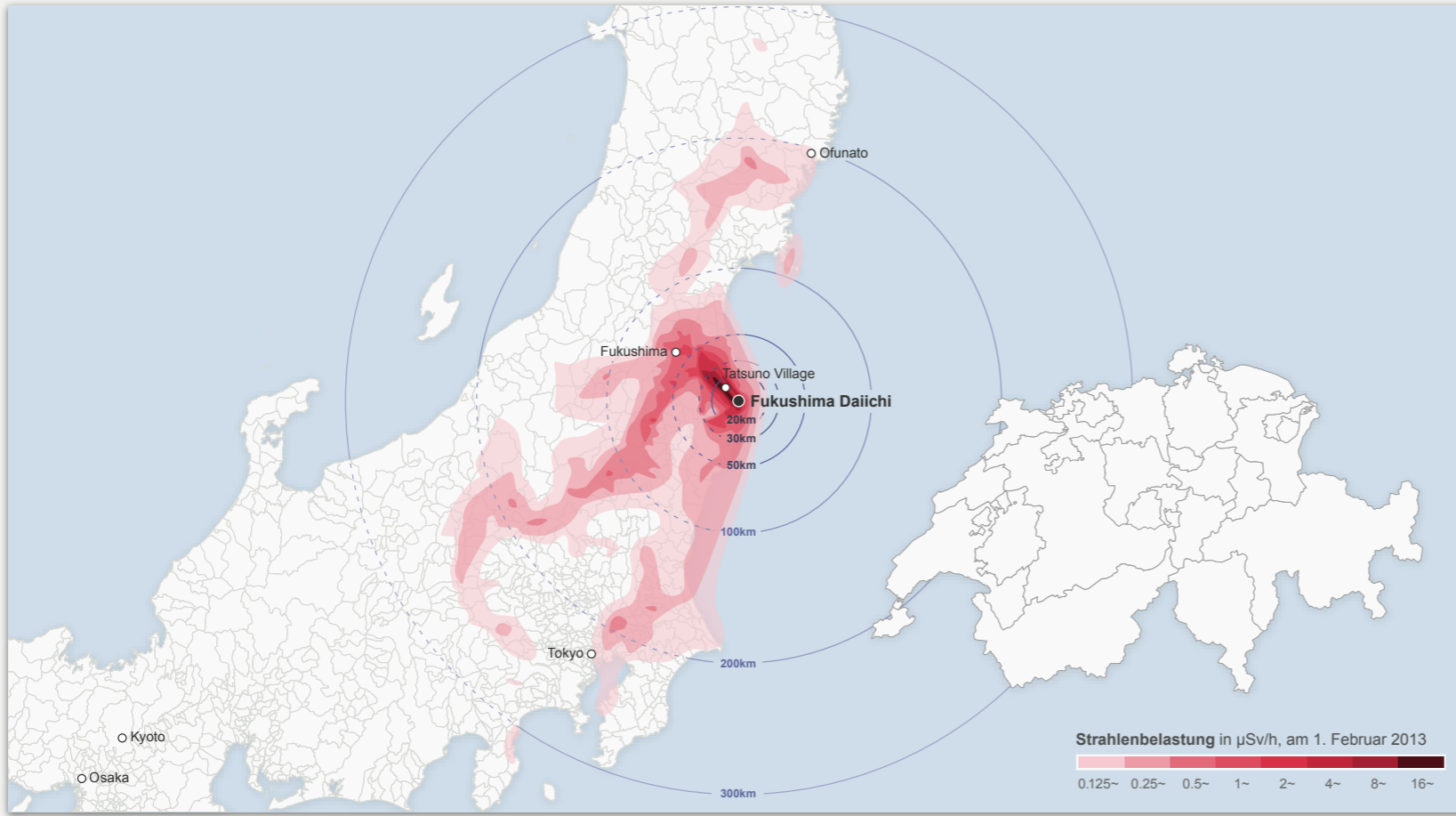
How is help
being done?

country

Emergency aid
visualization

Evacuation zone
Evacuated people
4 / 1000
L. 100
Don't date
in the Street
1000

Where do people get
food from?
After did they get
food from during disaster



Your exercise for the next hour

1. Pick a story from the newsfeed (articles from news agencies)
2. Read the story (if necessary, pick another story)
3. Define which elements of the story are interesting to follow up?
4. Decide what publication would the follow-up story be for?
5. How is the follow-up-story set up? How is the data displayed? How do you incorporate interactive elements?
6. Set a title and a lead – make sure it corresponds to the publication you chose in (4)
7. Design a poster for your story

Here's an example

OTTAWA, Sept 6 (Reuters)

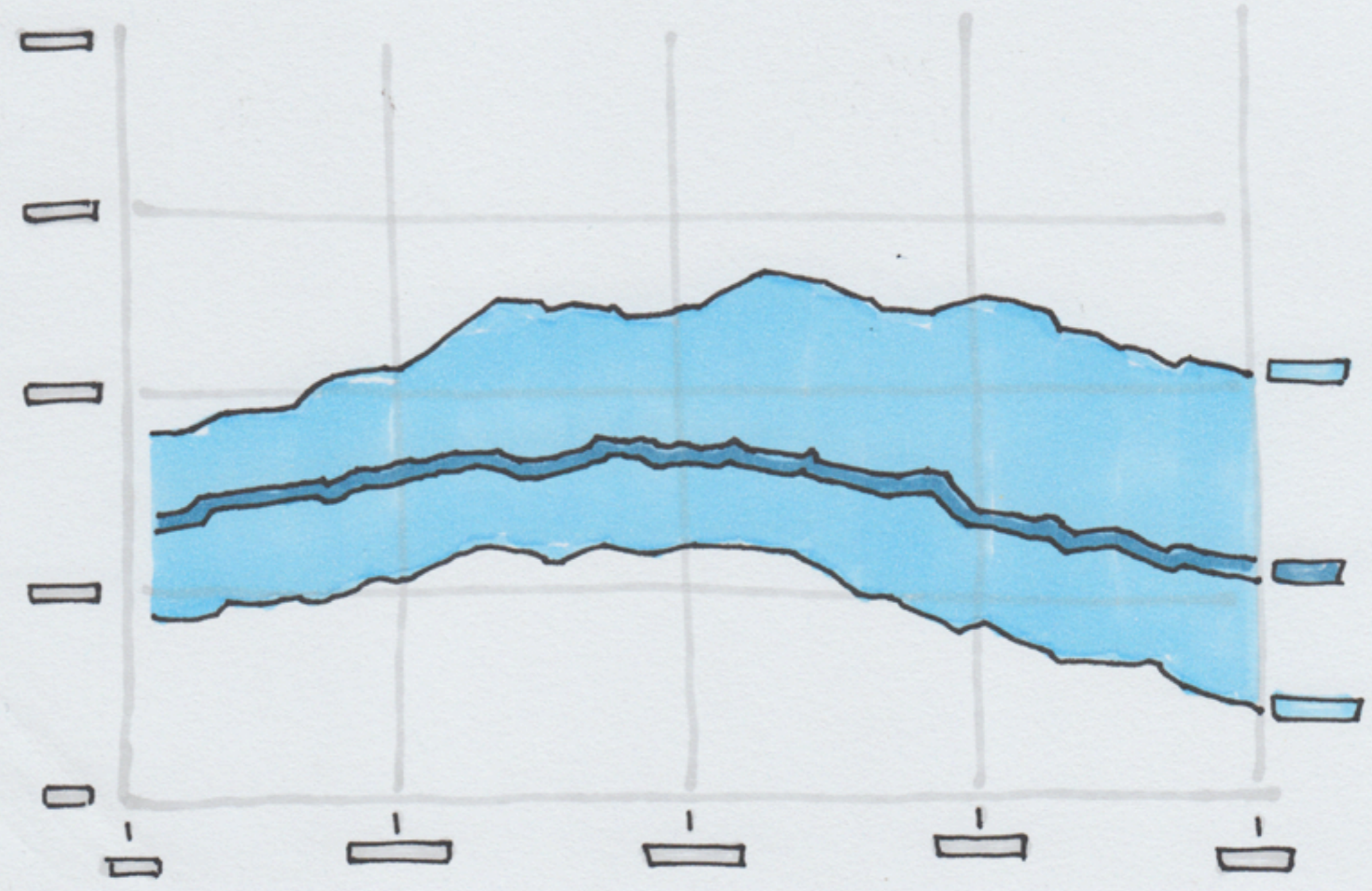
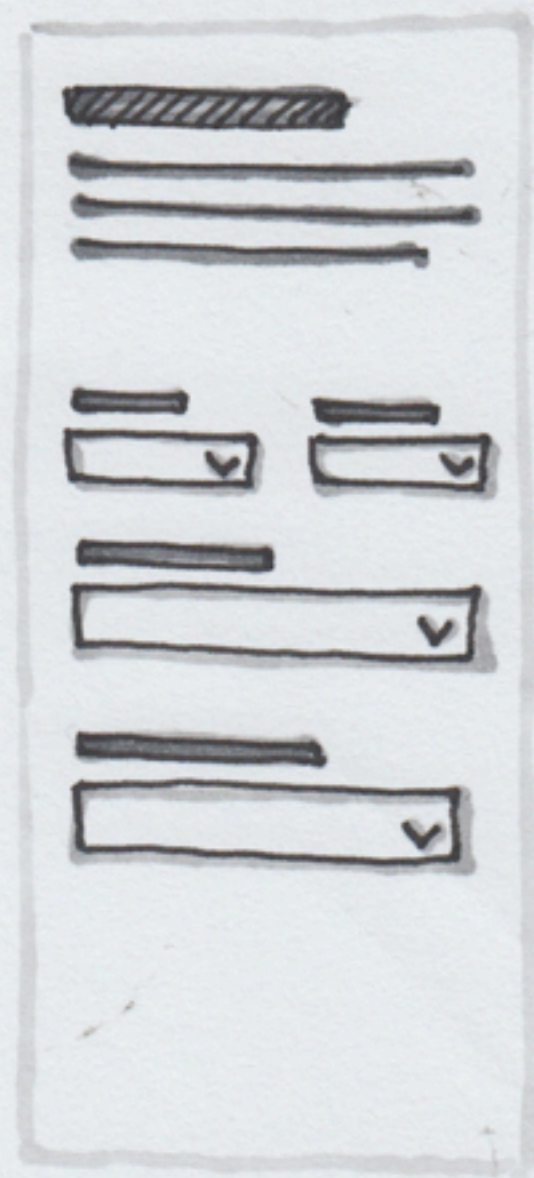
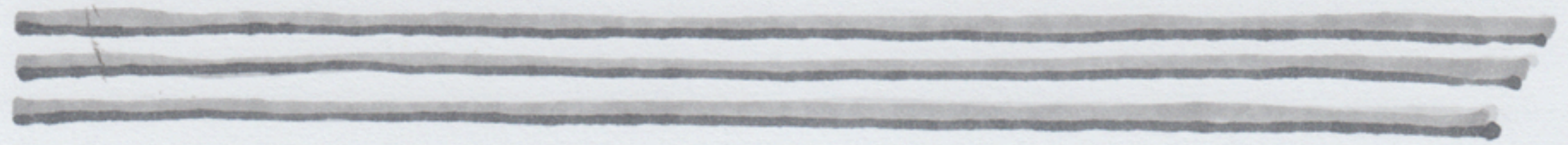
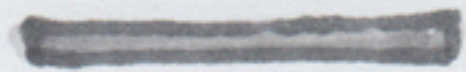
Canada's economy churned out a surprising 59,200 jobs in August, nearly triple the number expected, but most of the gains were in part-time work and the six-month trend in the labor market remains modest.

Here's an example

How many jobs were there in July? In August of the previous year?

OTTAWA, Sept 6 (Reuters)

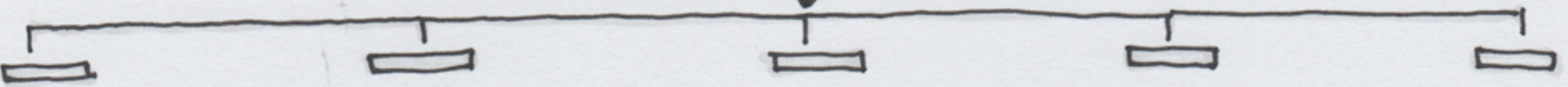
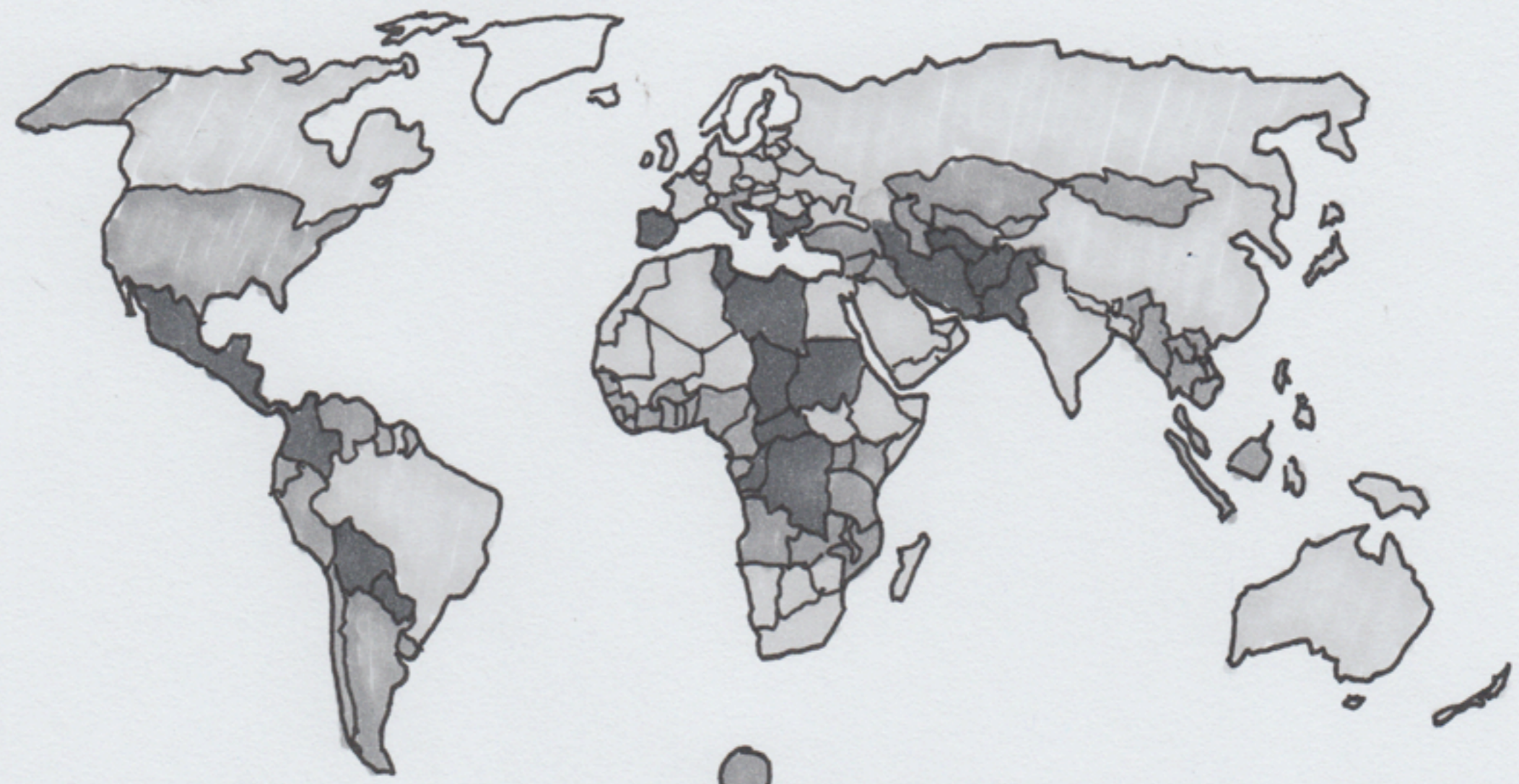
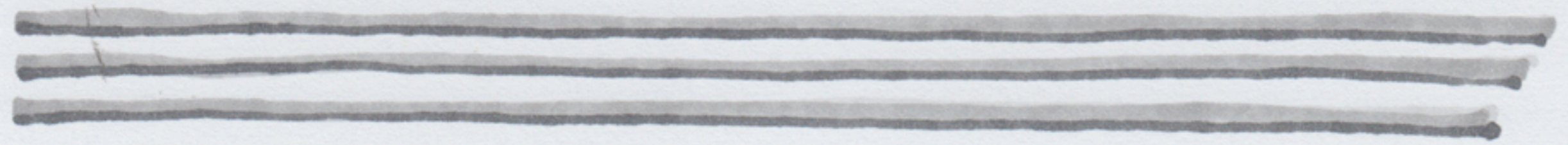
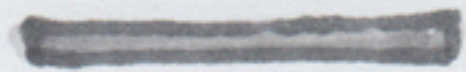
Canada's economy churned out a surprising 59,200 jobs in August, nearly triple the number expected, but most of the gains were in part-time work and the six-month trend in the labor market remains modest.



Here's an example

How is it compared to other countries? Which country is most comparable to Canada?

Canada's economy churned out a surprising 59,200 jobs in August, nearly triple the number expected, but most of the gains were in part-time work and the six-month trend in the labor market remains modest.



Here's an example

OTTAWA, Sept 6 (Reuters)

Canada's economy churned out a surprising 59,200 jobs in August, nearly triple the number expected, but most of the gains were in part-time work and the six-month trend in the labor

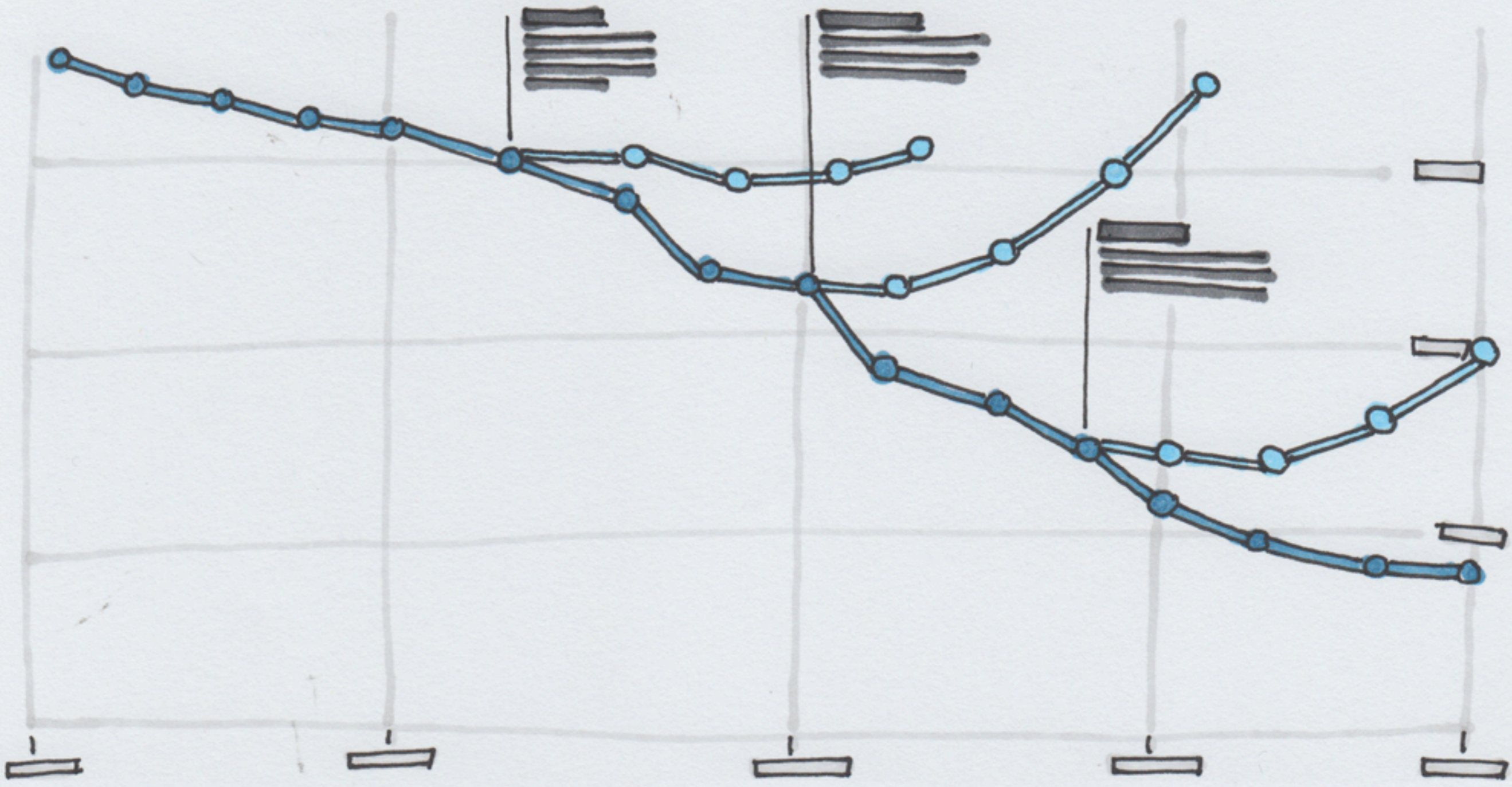
Who expected what? Which institutes provide prognoses?

[Redacted]

[Redacted]

[Redacted]

[Redacted]



Here's an example

KARACHI, Sept 6 (Reuters)

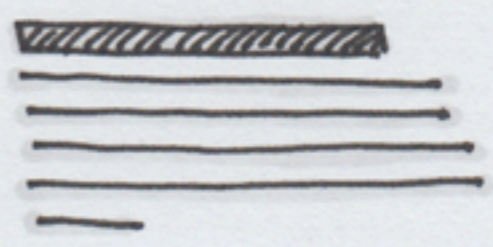
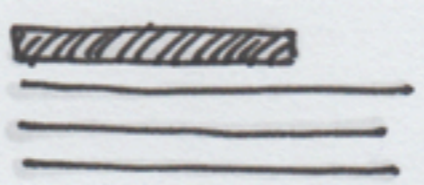
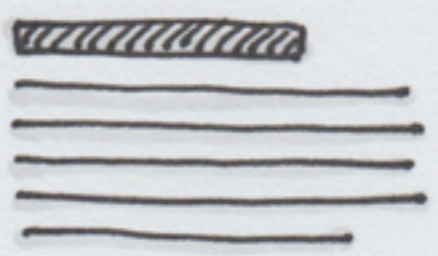
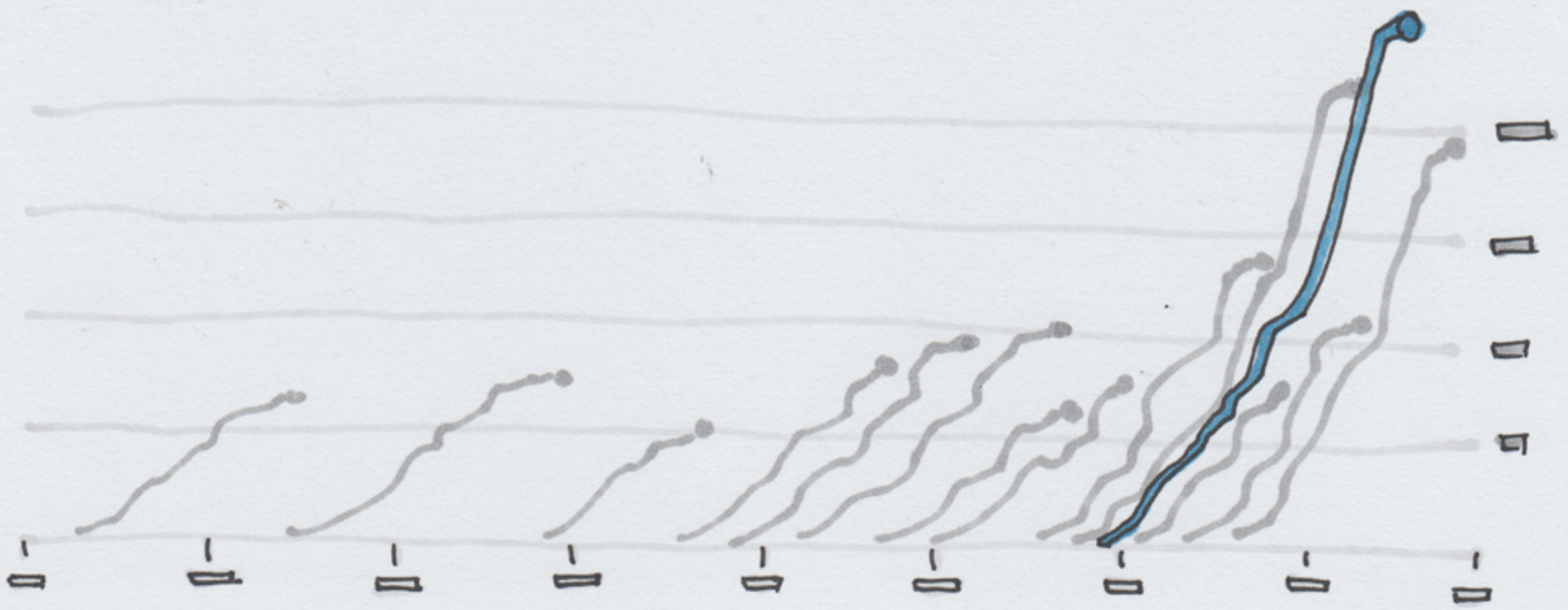
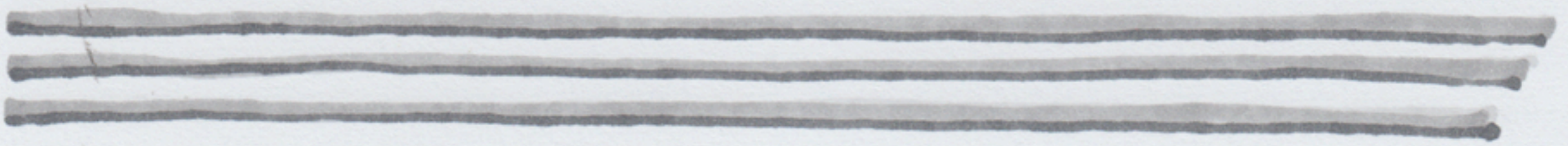
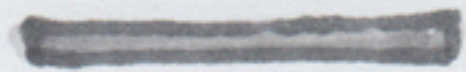
Pakistan wicketkeeper-batsman Umar Akmal has been given the green light to resume playing after suffering a fit while on duty for Barbados in the Caribbean Premier League last month. The 23-year-old had to drop out of the tour to Zimbabwe after being taken ill on a flight to Jamaica.

Here's an example

KARACHI, Sept 6 (Reut

How about the other players of the past? How did they regenerate?

Pakistan wicketkeeper-batsman Umar Akmal has been given the green light to resume playing after suffering a fit while on duty for Barbados in the Caribbean Premier League last month. The 23-year-old had to drop out of the tour to Zimbabwe after being taken ill on a flight to Jamaica.

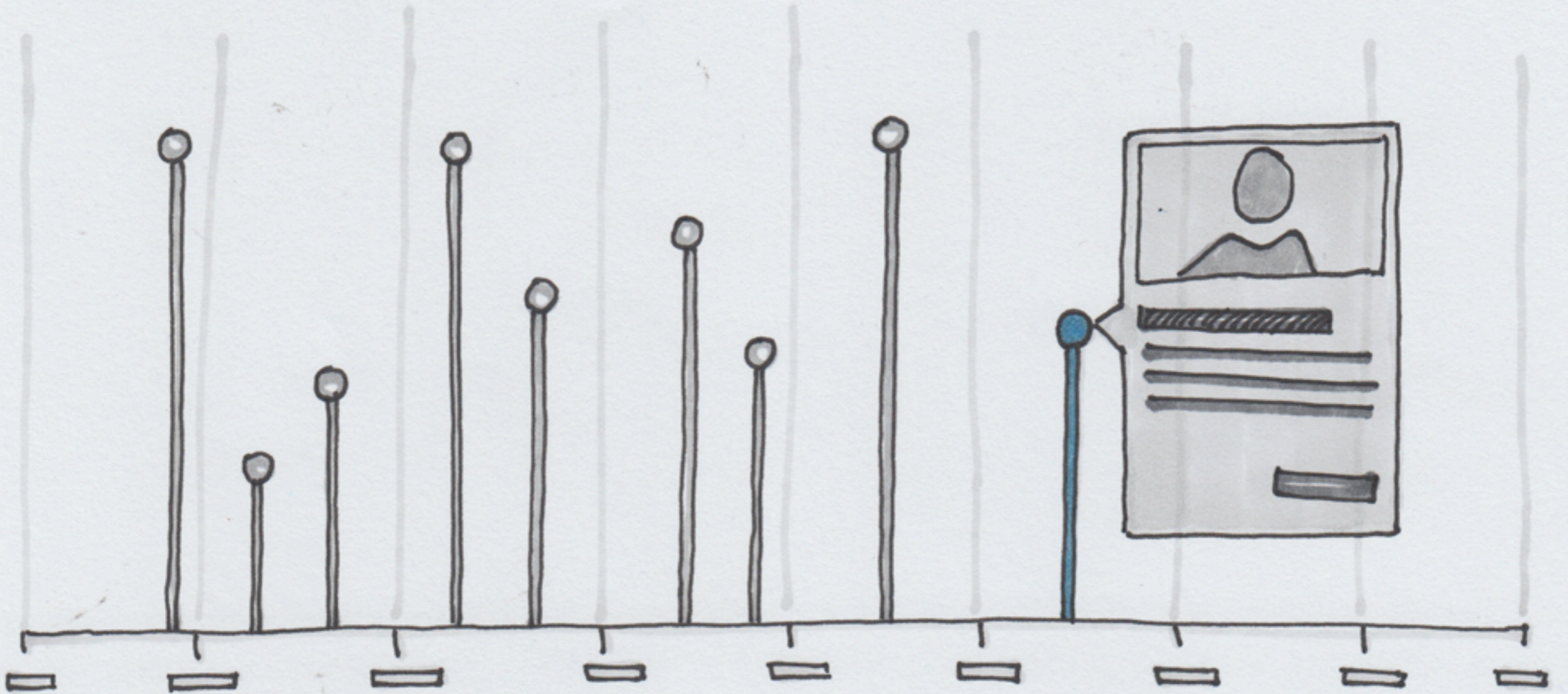
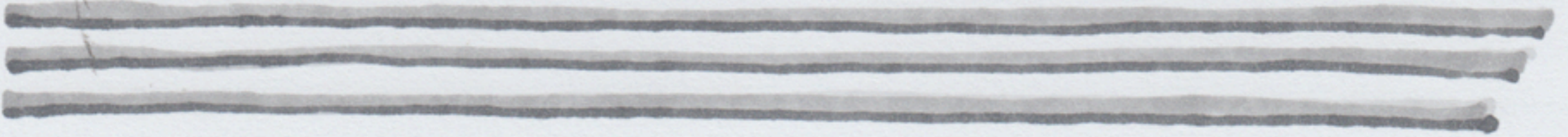
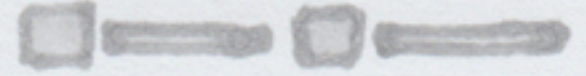


Here's an example

KARACHI, Sept 6 (Reuters)

Pakistan wicketkeeper-batsman Umar Akmal has been given the green light to resume playing after suffering a fit while on duty for Barbados in the Caribbean Premier League last month. The 23-year-old had to drop out of the tour to Zimbabwe after being taken ill on a flight to Jamaica.

How many people suffer a fit, at what age?

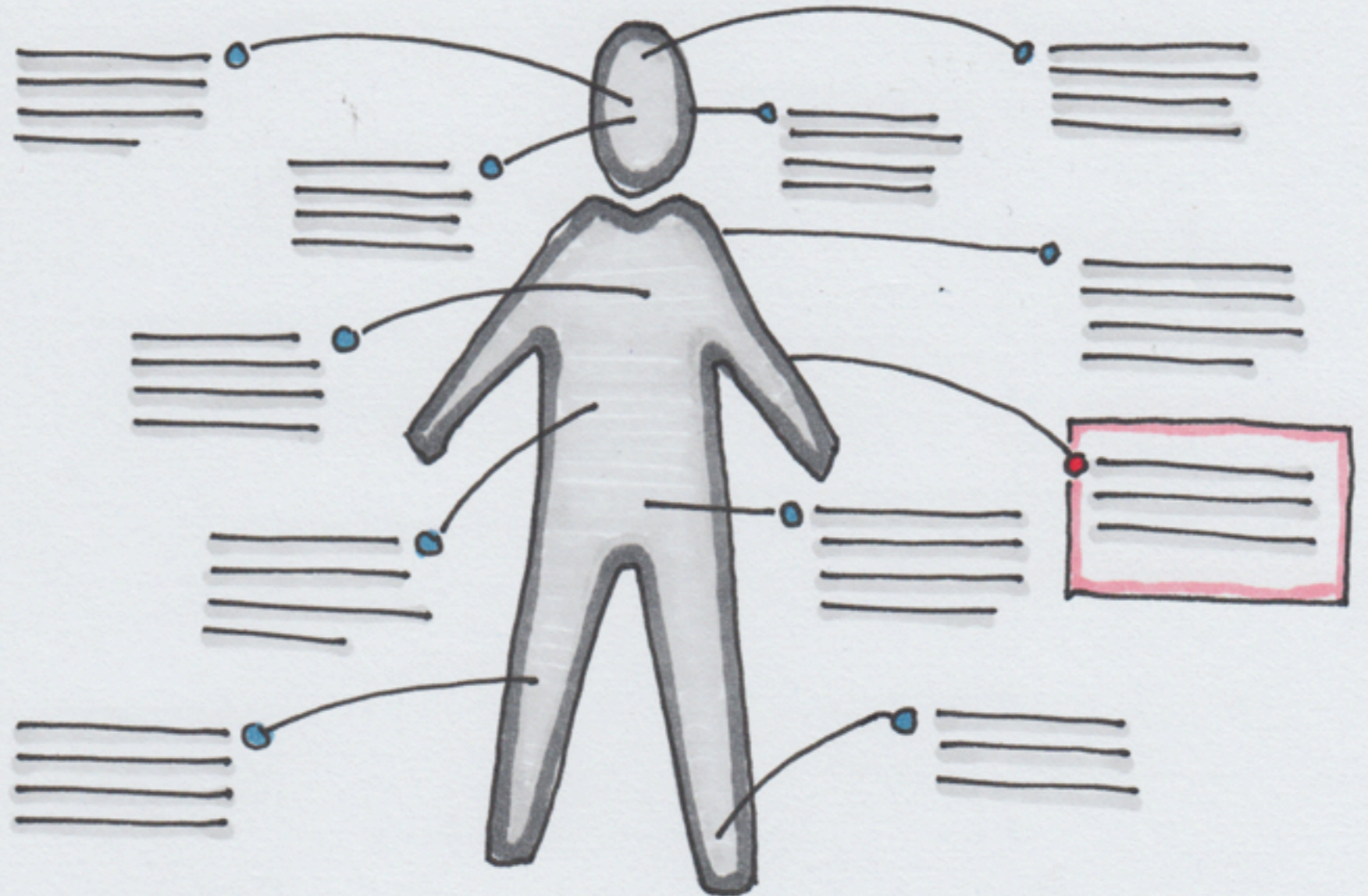
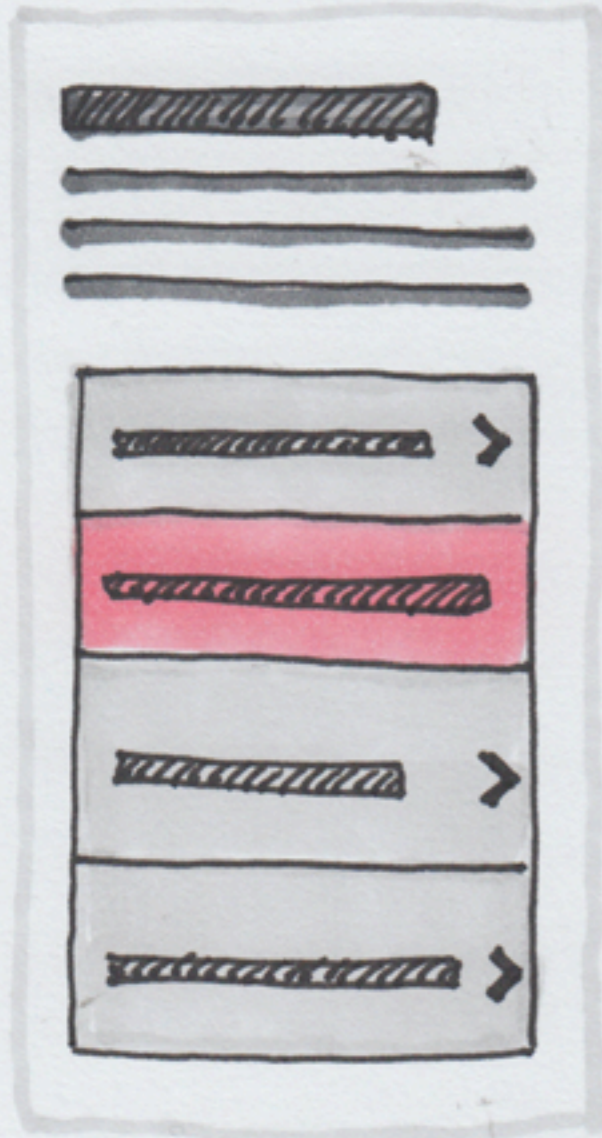
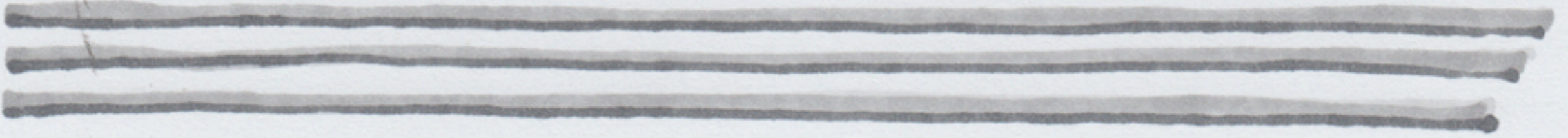
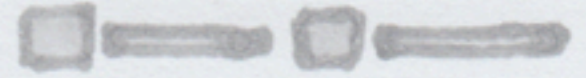


Here's an example

KARACHI, Sept 6 (Reuters)

Pakistan wicketkeeper-batsman Umar Akmal has been given the green light to resume playing after suffering a fit while on duty for Barbados in the Caribbean Premier League last month. The 23-year-old had to drop out of the tour to Zimbabwe after being taken ill on a flight to Jamaica.

What other reasons are there? How likely are you to suffer a fit with your current physical condition?

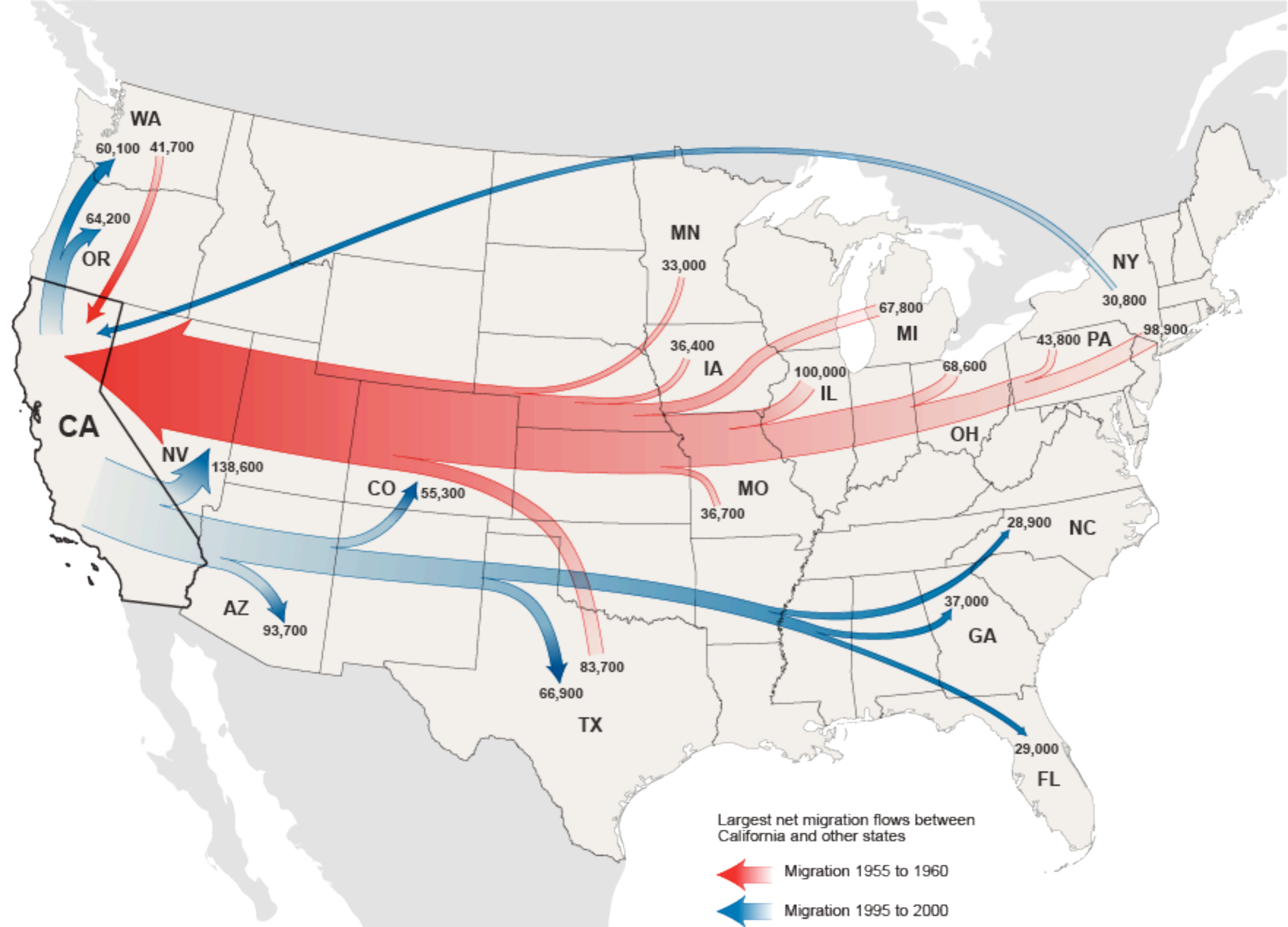


Ready, set, go: Pick a story from the newsfeed

1. Swiss lower house of parliament backs Gripen jets
2. China ditches pointless awards in latest anti-waste push
3. Six killed in two blasts near army sites in Egypt's Sinai
4. Iraq signs deal with BP to revive northern Kirkuk oilfield
5. Spanish Catalonia to press independence bid with human chain
6. Kenya's deputy president goes on trial at international court
7. U.S. Soccer Head Says FIFA Failed to Consider Qatari Weather
8. New York strip club dancers win 4-year fight for minimum wage
9. Humberto becomes first hurricane of 2013, no threat to land
10. Clint Eastwood's wife files for legal separation in California

Difficulties with
Visualizations

Visualisierung: Flüchtlingsströme



North Japan

— 800 km —

— SAPPORO —

400 km —

— SENDAI —

— TOKYO —

400 km —

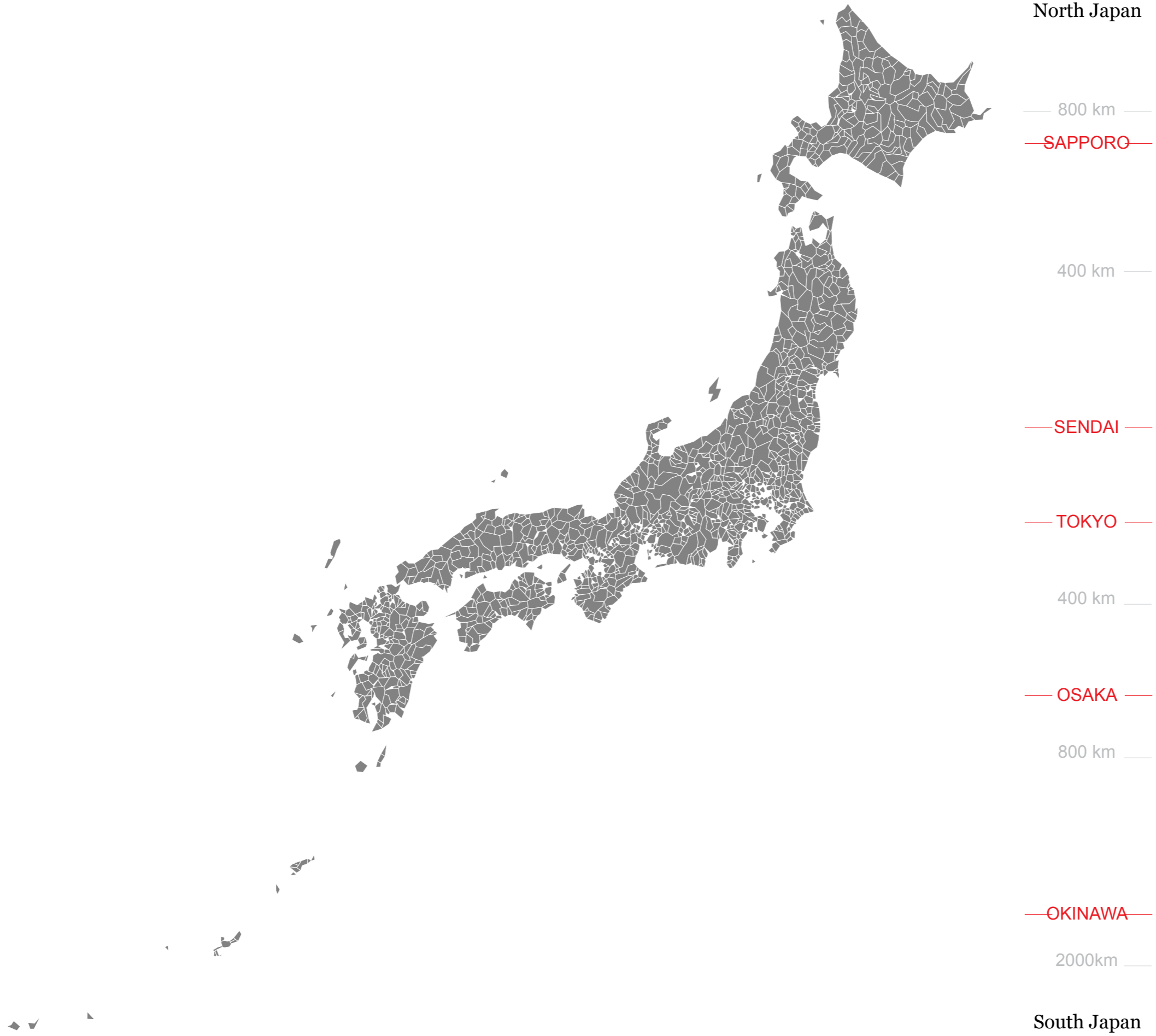
— OSAKA —

800 km —

— OKINAWA —

2000km —

South Japan



North Japan

2011

800 km

SAPPORO

400 km

SENDAI

TOKYO

400 km

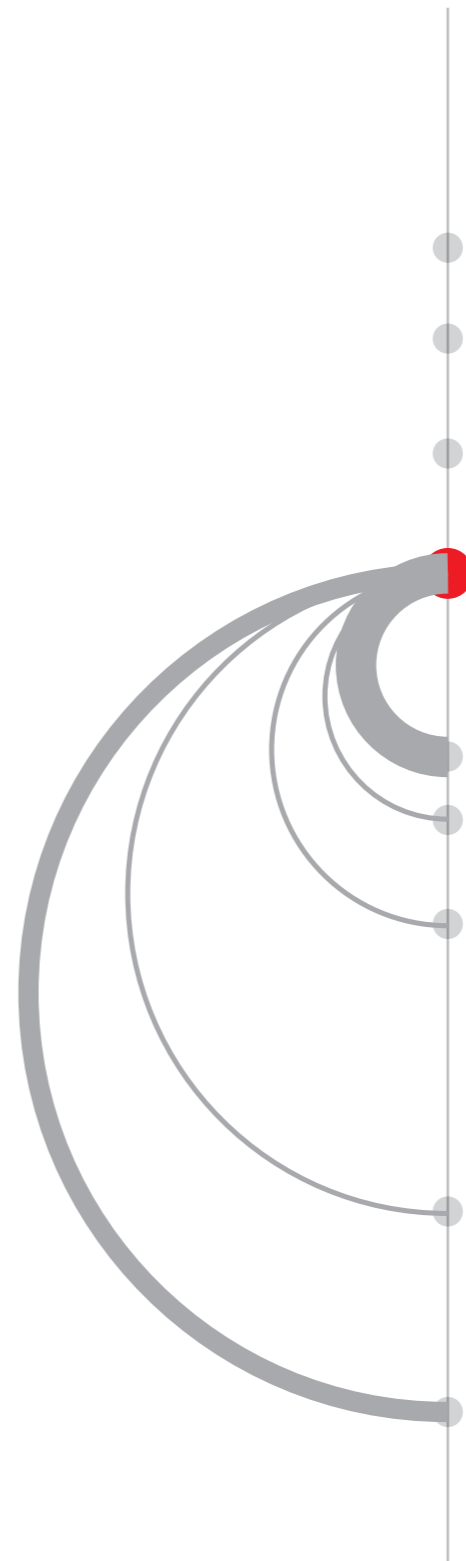
OSAKA

800 km

OKINAWA

2000km

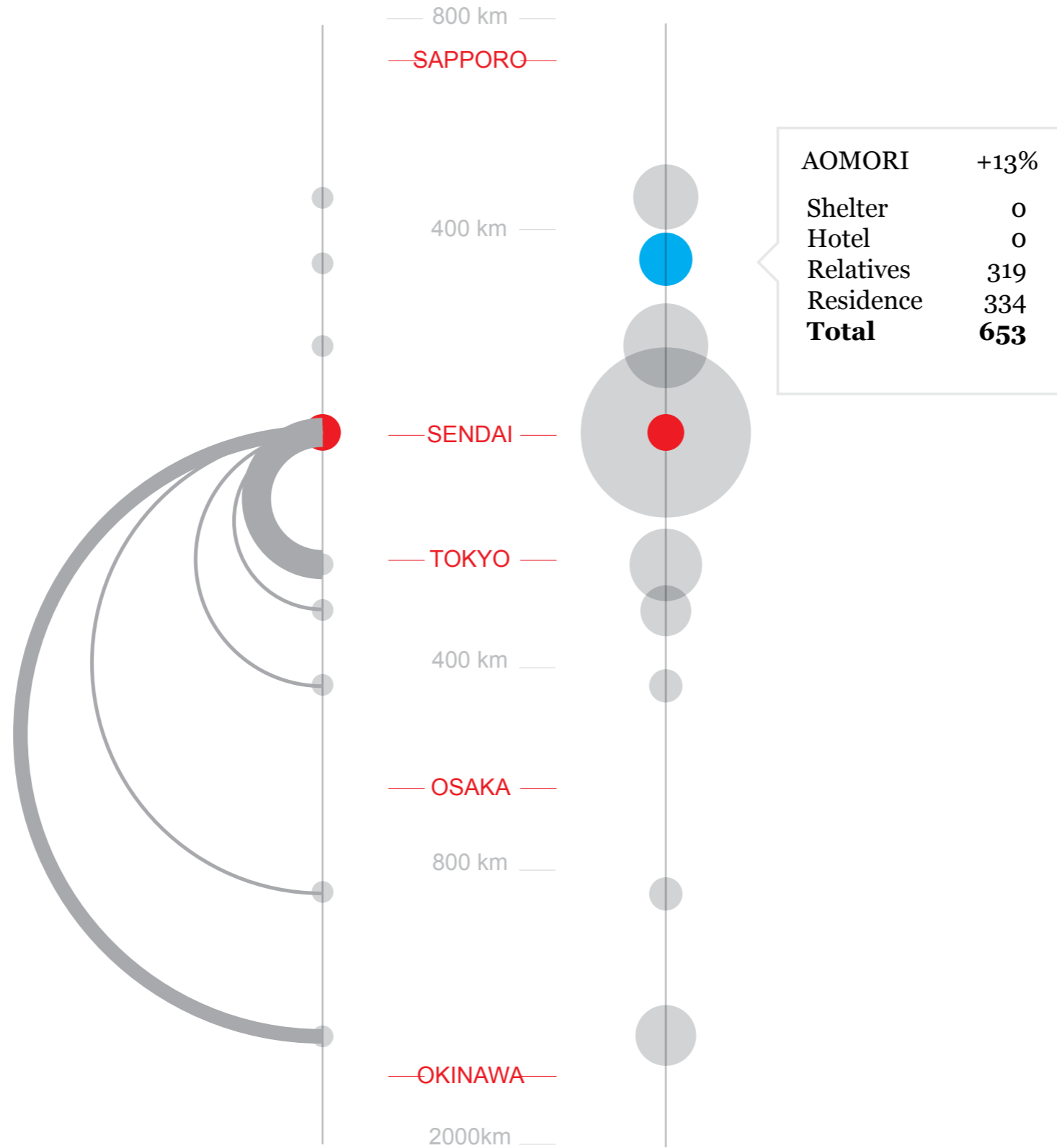
South Japan



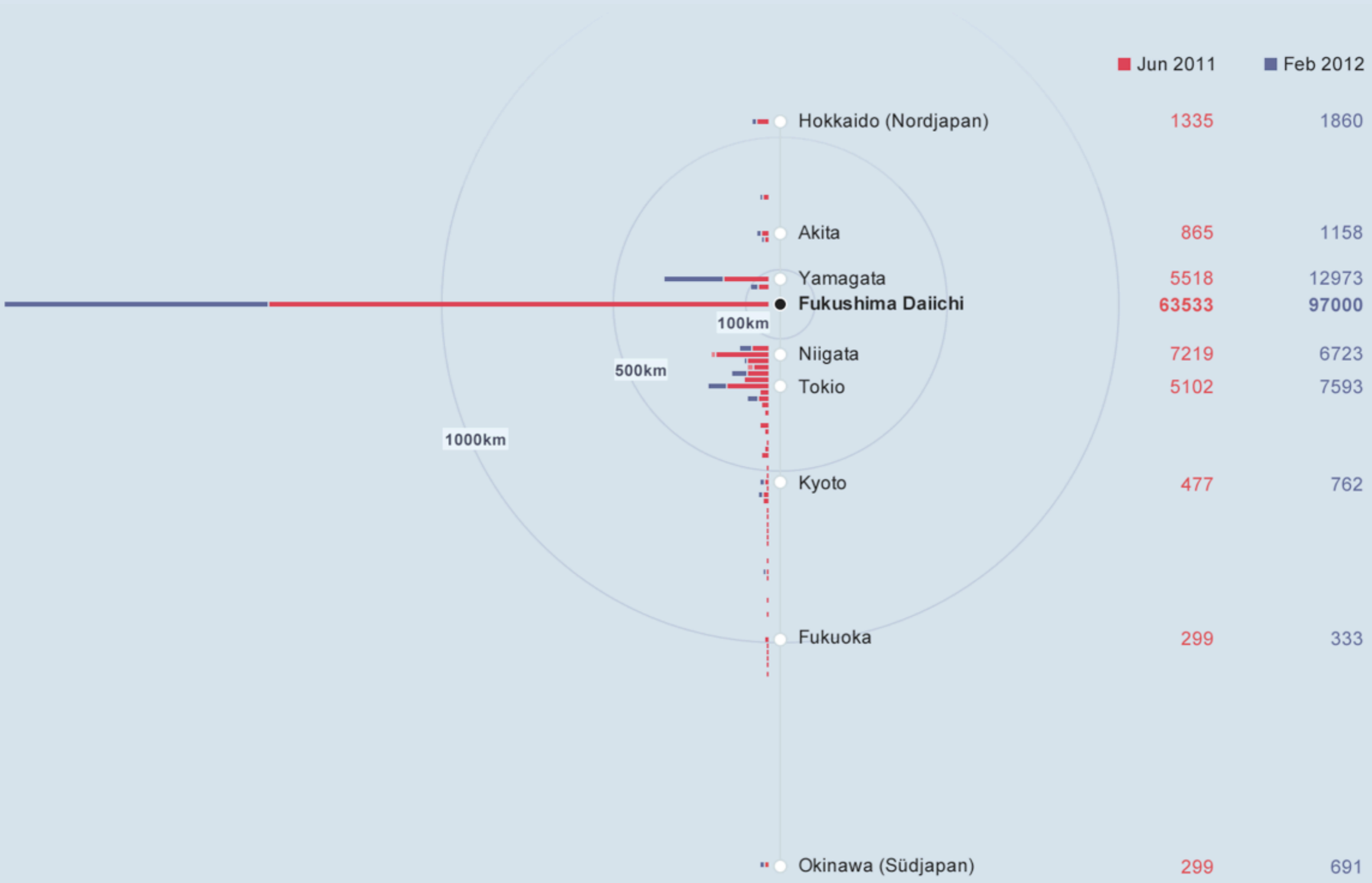
North Japan

2011

2012



South Japan



Visualisierung: Strahlendosis

Sievert (Einheit)

Das **Sievert** (Einheitenzeichen: Sv, nach dem schwedischen Mediziner und Physiker **Rolf Sievert**) ist die **Maßeinheit** verschiedener **gewichteter Strahlendosen**. Sie dient zur Bestimmung der **Strahlenbelastung** biologischer Organismen und wird bei der Analyse des **Strahlenrisikos** verwendet. Das Sievert wird als Einheit herangezogen für:

- Äquivalentdosis H ;
- Effektivdosis D_{eff} ;
- Organdosis H_T .

Da eine Äquivalentdosis von 1 Sv ein sehr großer Wert ist, werden die üblicherweise vorkommenden Werte mithilfe eines **SI-Präfixes** in Millisievert (1 mSv = 0,001 Sv = 10^{-3} Sv) oder Mikrosievert (1 μ Sv = 0,000 001 Sv = 10^{-6} Sv) angegeben.

Inhaltsverzeichnis [Verbergen]
1 Strahlenbelastung und Grenzwerte
1.1 Deutschland
1.2 Japan
2 Bezug zu anderen Einheiten
2.1 Gray
2.2 Rem (veraltete Einheit)
2.3 Becquerel
3 Einzelnachweise

	Einheit
Norm	SI-Einheit
Einheitenname	Sievert
Einheitenzeichen	Sv
Beschriebene Größe(n)	Äquivalentdosis
Größensymbol(e)	H, D
Dimensionssymbol	$L^2 T^{-2}$
In SI-Einheiten	$1 \text{ Sv} = 1 \frac{\text{J}}{\text{kg}} = 1 \frac{\text{m}^2}{\text{s}^2}$
Benannt nach	Rolf Sievert
<i>Siehe auch:</i> Becquerel , Gray	

Strahlenbelastung und Grenzwerte [\[Bearbeiten\]](#)

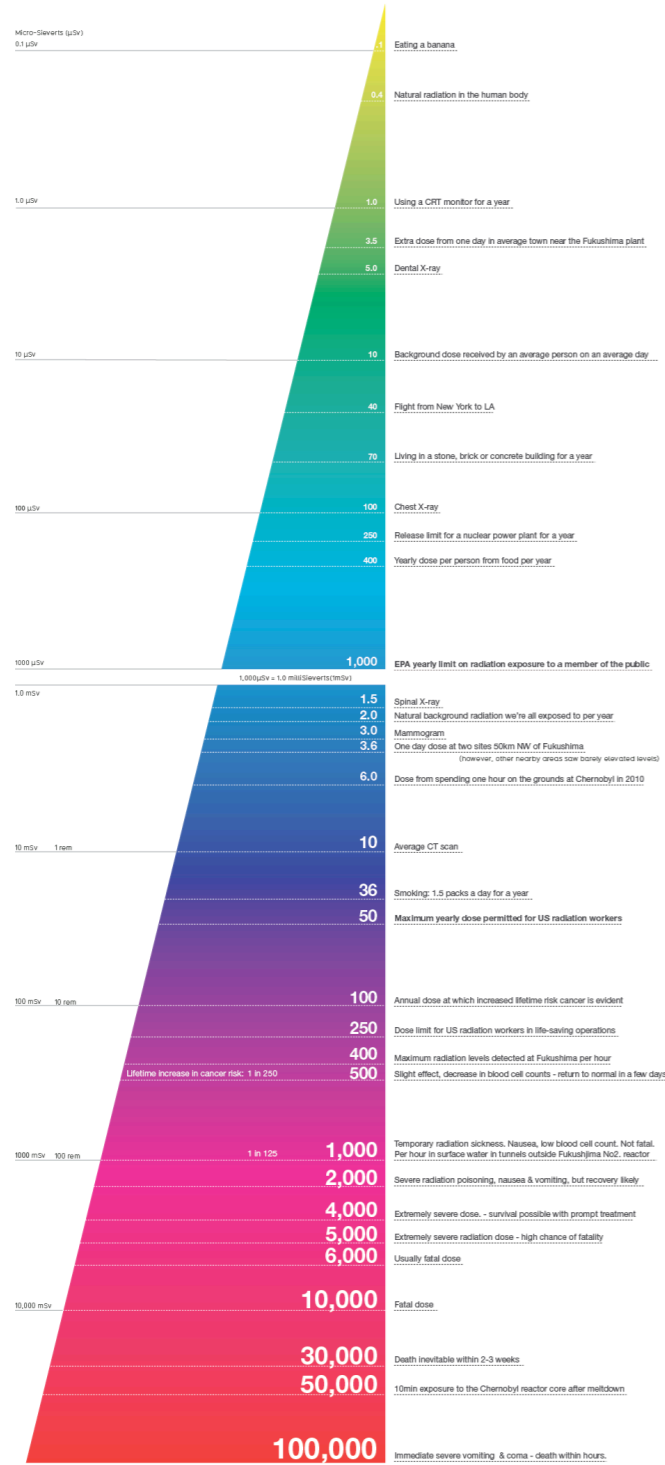
Deutschland [\[Bearbeiten\]](#)

Als Vergleich zur Beurteilung eines Strahlenrisikos kann die **natürliche Strahlenbelastung** dienen, in Deutschland wird für deren Äquivalentdosis H ein mittlerer Wert von 2,4 mSv pro Jahr zugrunde gelegt.^[1] Die folgenden Grenzwerte gelten für Deutschland *zusätzlich*^[2] zur natürlichen Strahlung:

Unbedenkliche Dosisleistung	Eingreifrichtwert für langfristige Umsiedlung
1 mSv (1.000 μ Sv) pro Jahr ^[3]	100 mSv (100.000 μ Sv) pro Jahr ^[4]
0,02 mSv (20 μ Sv) pro Woche	2 mSv (2.000 μ Sv) pro Woche
0,003 mSv (3 μ Sv) pro Tag	0,3 mSv (300 μ Sv) pro Tag
0,000 1 mSv (0,1 μ Sv) pro Stunde	0,01 mSv (10 μ Sv) pro Stunde

Klinische Symptome der Strahlenkrankheit
150 mSv (150.000 μ Sv) als integrierte Dosis ^[5]

Radiation Dosage Chart

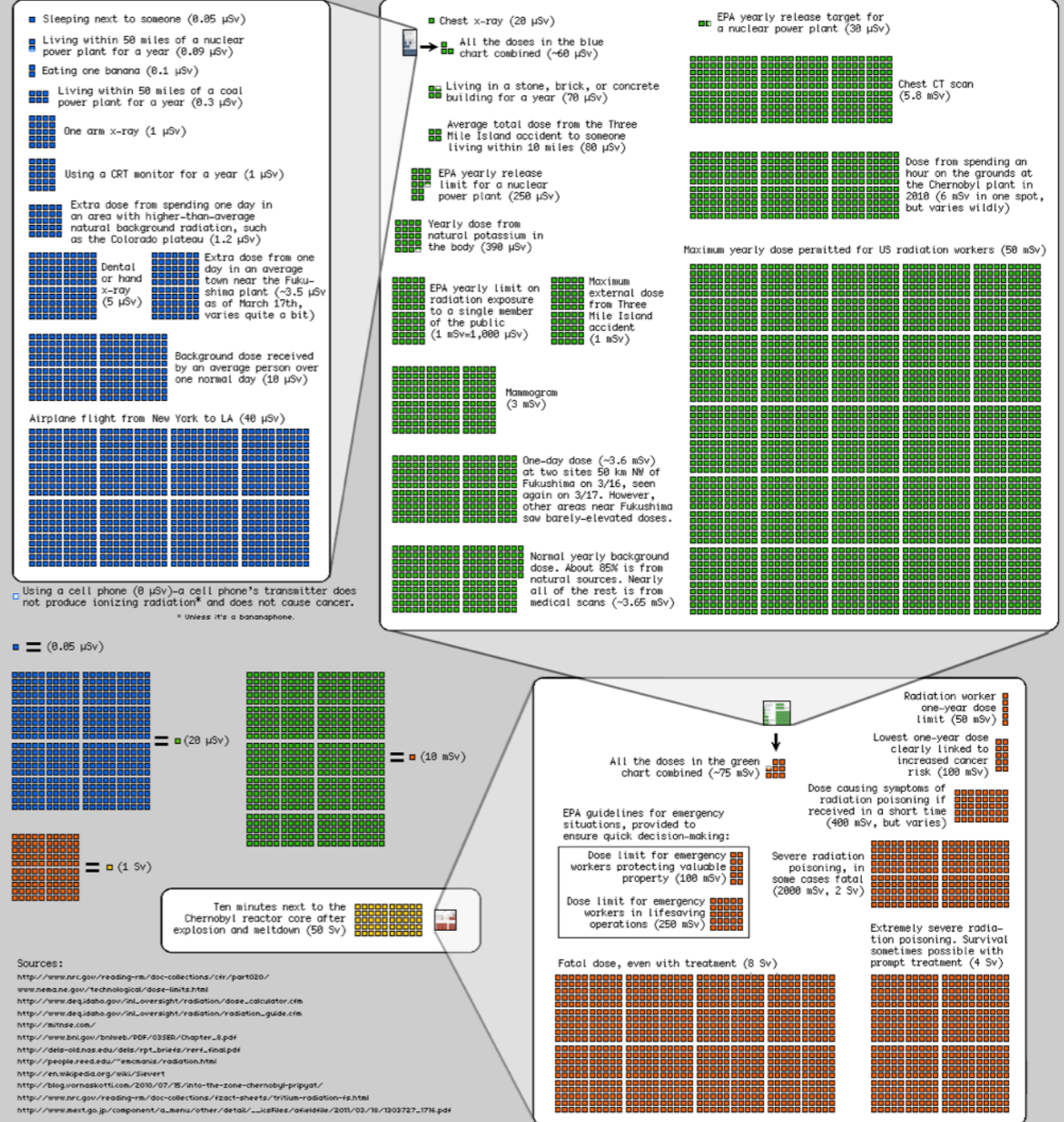


David McCandless // v1.3 // Mar 2010
 InformationsBeautiful.net

Sources: BBC, Guardian Datablog, Mayo Clinic, WHC
 data: bit.ly/radiationchart
 note: logarithmic scale & average doses used, triangle illustrative

Radiation Dose Chart

This is a chart of the ionizing radiation dose a person can absorb from various sources. The unit for absorbed dose is "sievert" (Sv), and measures the effect a dose of radiation will have on the cells of the body. One sievert (all at once) will make you sick, and too many more will kill you, but we safely absorb small amounts of natural radiation daily. Note: The same number of sieverts absorbed in a shorter time will generally cause more damage, but your cumulative long-term dose plays a big role in things like cancer risk.



Sources:
<http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/>
www.nema.ne.gov/technological/dose-limits.html
http://www.deq.idaho.gov/nl_oversight/radiation/dose_calculator.cfm
http://www.deq.idaho.gov/nl_oversight/radiation/radiation_guide.cfm
<http://mitnse.com/>
http://www.bnl.gov/bnlweb/PDF/03SER/Chapter_8.pdf
http://dels-old.nas.edu/dels/rpt_briefs/rerf_final.pdf
<http://people.reed.edu/~escm/ans/radiation.html>
<http://en.wikipedia.org/wiki/Sievert>
<http://blog.vornasokits.com/2009/07/15/into-the-zone-chenobyl-prispat/>
<http://www.nrc.gov/reading-rm/doc-collections/tzact-sheets/tr15m-radiation-is.html>
http://www.met.jp/component/a_menu/other/detail/_id=File/afid=6e/2011/02/18/1303727_1716.pdf

Chart by Randall Munroe, with help from Ellen, Senior Reactor Operator at the Reed Research Reactor, who suggested the idea and provided a lot of the sources. I'm sure I've added in lots of mistakes; it's for general education only. If you're basing radiation safety procedures on an internet PNG image and things go wrong, you have no one to blame but yourself.

0.01 mSv



Röntgenaufnahme eines Zahns

0.055 mSv



Einfacher Flug Europa – USA

1 mSv



Jahresdosisgrenzwert Schweiz

1.4 mSv



1 Schachtel Zigaretten ohne Filter rauchen

2.3 mSv



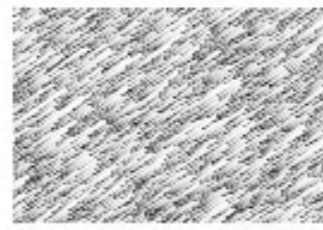
1 Jahr als Flugbegleiter arbeiten

5.5 mSv



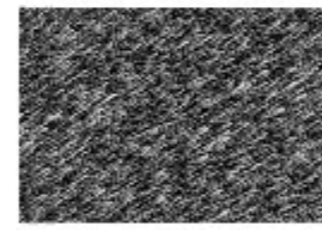
Strahlenbelastung in der Schweiz

20 mSv



Grenzwert für strahlenexponiertes Personal

100 mSv



Schwellendosis

2 mSv



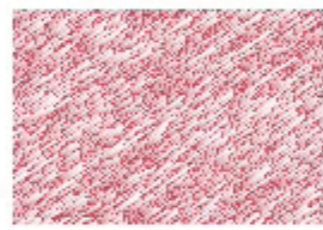
Grenzwert auf Spielplatz in Fukushima

4.4 mSv



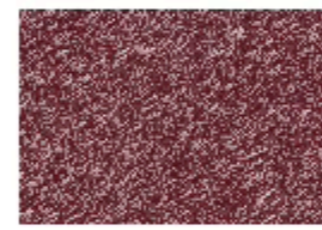
Zone mit 0.5 µSv/h

35 mSv



Zone mit 4 µSv/h

140 mSv



Zone mit 16 µSv/h

400 mSv



AKW Fukushima am 14. März 2011 (pro Stunde)

STRAHLENBELASTUNG

Die Strahlenbelastung wird in Sievert gemessen. Diese Messeinheit wird auch bei der Analyse des Strahlenrisikos verwendet. Eine Äquivalentdosis von 1 Sievert (Sv) ist ein sehr grosser Wert.

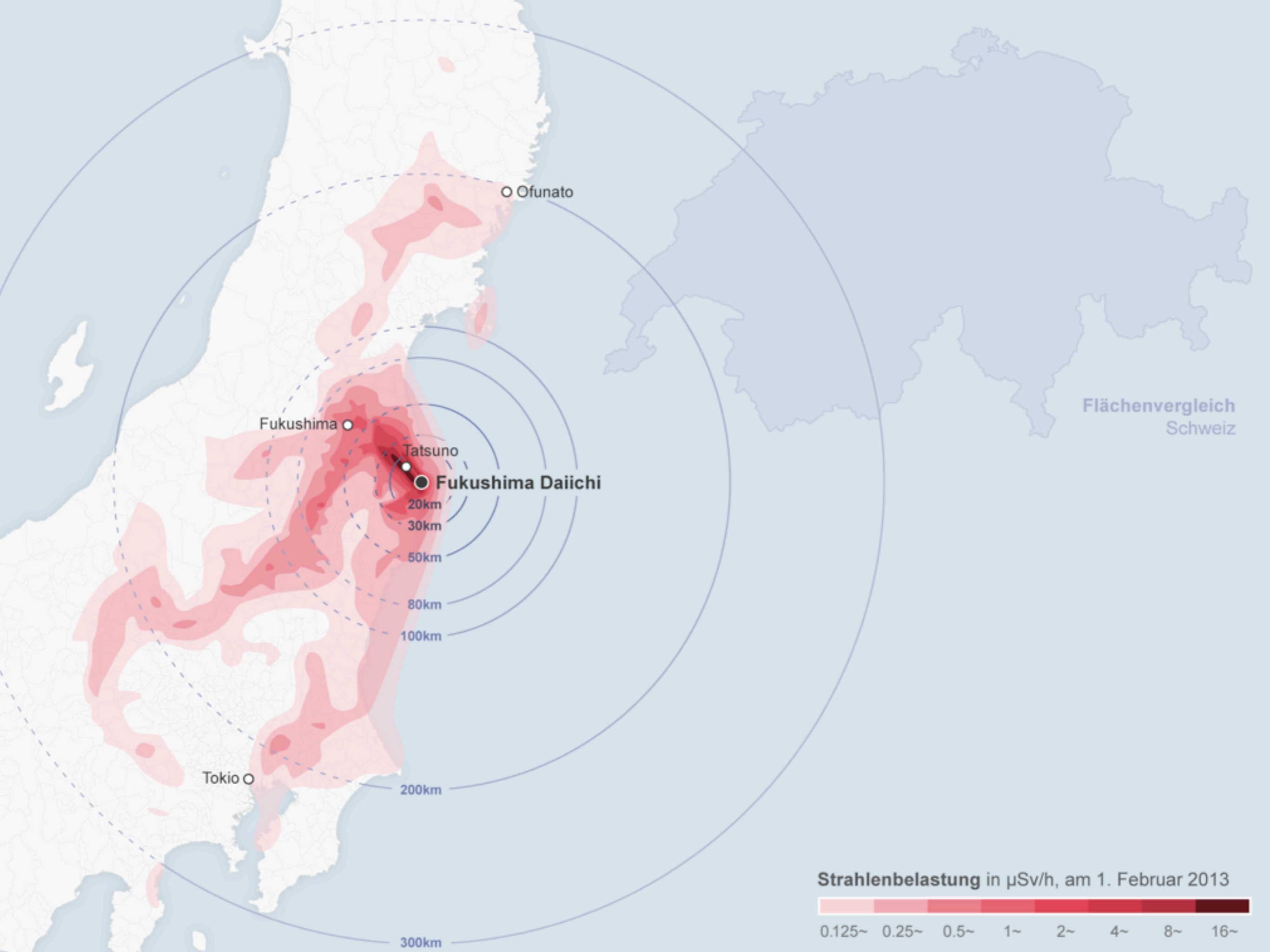
Deshalb werden die Werte oftmals in Millisievert (1 mSv) oder Mikrosievert (1 µSv) angegeben. Die Animation zeigt mittlere Werte der Strahlenbelastung durch verschiedene Quellen in Millisievert über den Zeitraum eines Jahres.

STRAHLENBELASTUNG IN FUKUSHIMA

Die Animation zeigt die Strahlenbelastung in verschiedenen Gebieten der Präfektur Fukushima.

STRAHLENBELASTUNG IN FUKUSHIMA DAIICHI

Die maximale Strahlenbelastung im AKW Fukushima Daiichi am 14. März 2011 (pro Stunde).



○ Ofunato

○ Fukushima

○ Tatsuno

● Fukushima Daiichi

20km

30km

50km

80km

100km

○ Tokio

200km

300km

Flächenvergleich
Schweiz

Strahlenbelastung in $\mu\text{Sv/h}$, am 1. Februar 2013



0.125~ 0.25~ 0.5~ 1~ 2~ 4~ 8~ 16~

Merci!