Careers in Statistics: Why and What You Need to Keep Fit!
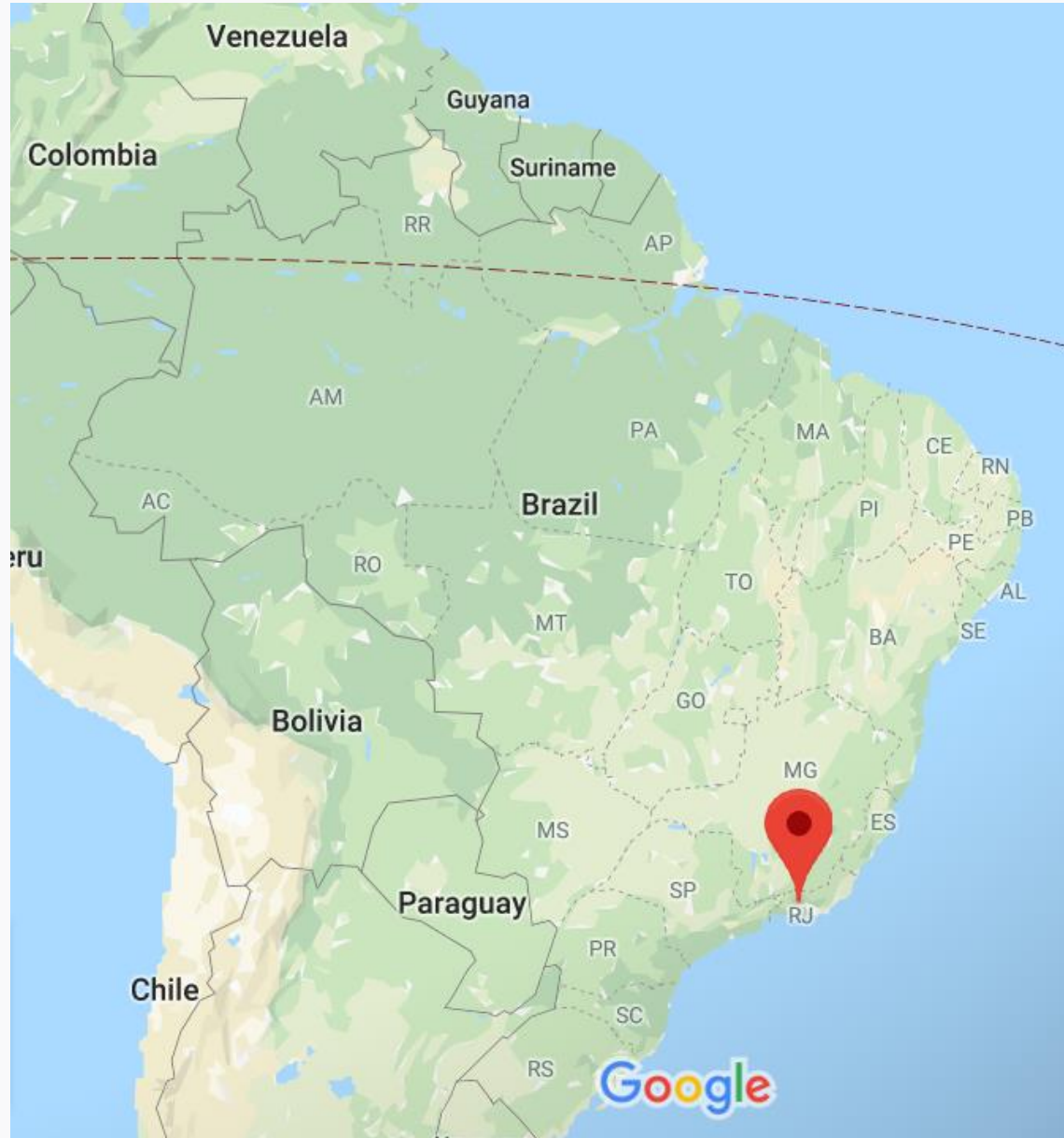
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National School of Statistical Sciences

Brazil

IBGE

Where I come from: Bangu – Rio de Janeiro – Brazil

Where I studied

Escola Pública Martins Junior (**1966-69**)

Ginásio Estadual Abrahão Jabour (**1970-73**)

ENCE – National School of Statistical Sciences

Secondary Technical School (**1974-76**), and

BSc in Statistics (**1977-80**)

Appointment at IBGE – **August 1981**
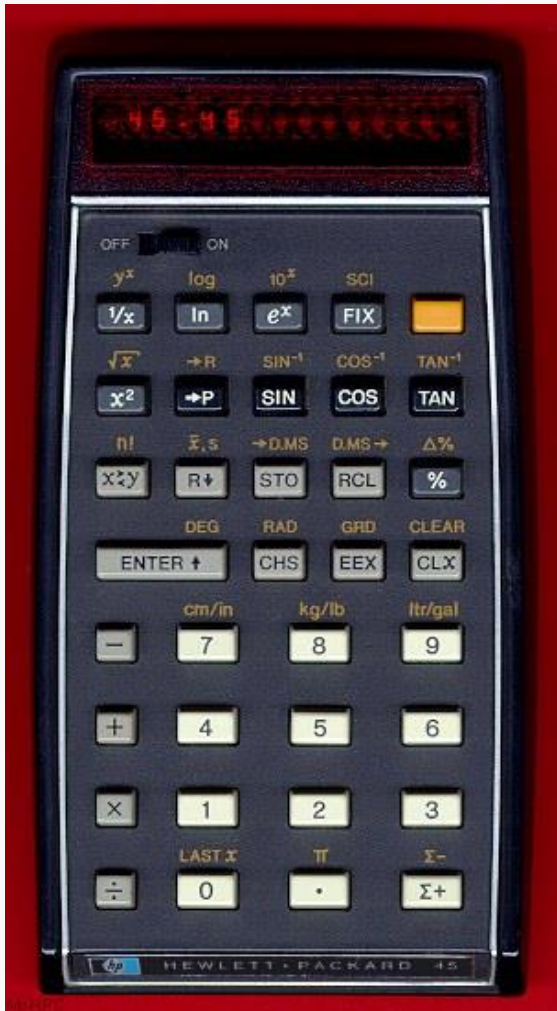
IMPA – Institute of Pure & Applied Maths

MSc in Statistics (**1981-88**)
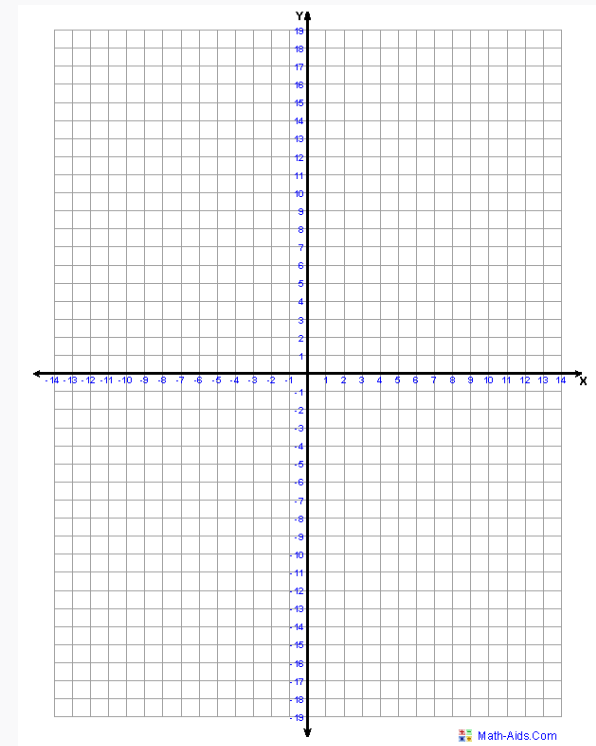
University of Southampton (UK)

PhD in Statistics (**1992-96**)

How I studied

My first calculator in 1974

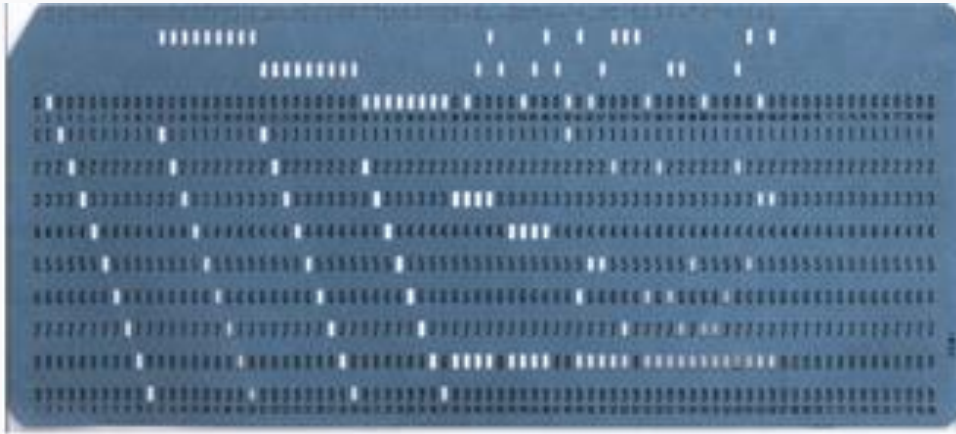Graph paper for drawing plots

My dream of consumption in 1976

My first 'connection' with an IBM mainframe computer in 1977

IBM 1442 card reader / punch for 80 column cards

An IBM 80-column punched card of the type most widely used in the 20th century

Countries that I have visited so far

Continents	Countries Visited
Africa	5
Asia	11
Europe	18
Latin America and Caribbean	8
North America	2
Oceania	1
Total	**45**

Why so much of my 'history'

The '*knowing*' and the '*doing*' of Statistics have **changed radically** since I have started studying it.

Focus in the 1970s was on **how** to perform statistical calculations!

Tools available were **very limited**, in comparison.

Calculations and graphs were **hand made**!

Data volumes that one could handle were **much smaller**.

Few knew what a professional statistician could do or even that **Statistics** was **a profession**!

The Profession & its challenges

The revolution in data availability, accessibility, speed of production and pressure to 'do something' with the available data.

Modern approaches where the 'art and science' of data analysis, modeling and inference are being built up into software:

- Machine learning;
- Artificial intelligence;
- Data mining;
- Etc.

The Profession & its challenges

Rapidly evolving software, which aims to be less dependent on the skills of the users!

Source:
http://www.youngandprosperous.com/2010/09/fear-of-automation/

My main message: you'll need to work hard just to 'keep fit'!

Some ideas on what to do to 'keep fit'.

Some approaches to 'keep fit'

1. Read, listen, reach out
2. Present and discuss your work
3. Write-up your work
4. Develop and teach courses
5. Supervise, mentor junior colleagues
6. Attend conferences
7. Join professional or academic society
8. Take courses
9. Consider distance learning opportunities
10. Consult & collaborate

Read, listen, reach out

Lots going on 'around' Statistics.

Read frequently.

Read outside of your own area of expertise.

Review work of others (refereeing, etc.).

Attend seminars / talks / conferences in other areas, not only in 'Statistics'.

Join 'study groups' or 'learning communities'.

Present and discuss your work

Make sure that you **present and discuss** your work with peers as well as with 'users'.

Good **presentations always raise good questions and discussion**, which can lead to improvement and learning.

They also create opportunities for **legitimate challenges** to your work to be identified.

Write-up your work

Make sure that you **write-up your work**.

Writing-up **helps focus** on the important ideas, concepts, methods and results.

It is also essential to **get it** more thoroughly **reviewed**.

Another good way of creating opportunities for legitimate challenges to be identified.

Organizations may help with policies on writing and reviewing.

Develop and teach courses

Teaching a course is a fantastic opportunity to learn / **consolidate knowledge**.

It helps you to revisit the topics of the course, **broaden and deepen** your own **knowledge**.

It also raises opportunities for questions, which you may use to learn more.

Make sure your **teaching is assessed** and take notice of the outcome and comments.

Organizations may assist with policies to encourage continued professional education.

Supervise & mentor junior colleagues

Supervising or mentoring the work of others also provides opportunities for learning.

Whenever possible, **engage formally** in such activities.

Mentoring is also great to **keep abreast of new trends** and perceptions prevailing with the younger generations.

Attend conferences

Plan for and invest in **attending professional conferences**.

They enable opportunities for **concentrated exposure** to what's going on and novelties.

Use them to **plan** your forthcoming **personal development** activities, by defining priority areas or topics for learning.

Exploit their **networking opportunities** to engage in the other learning activities.

Join a professional society

Professional & academic societies facilitate all of the above mentioned activities.

Yet not all professionals join or take part.

The **cost** of joining societies **is modest**, for the services they provide.

They offer a convenient and **focused approach to networking** and to be involved.

They also provide many opportunities for **continued education**.
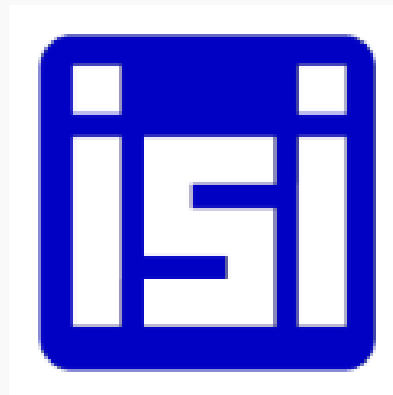
Take courses

Formal courses are a good source of learning.

They have the benefit of **structure** and a **natural learning community**.

They may lack the precise focus you need.

But they will help you focus on learning for a well defined period of time.

They also help with **record keeping**.

Distance learning

A powerful new approach for learning (and teaching) Statistics (and many other things).

Challenge: you must be more **pro-active** and **disciplined** in the learning process.

Opportunity: Distance learning makes it possible to learn from the best and often at your own pace.

It enables continued education both at home or at the workplace.

Statistical software

Professional statisticians must be **proficient** in at least one major statistical software.

R seems to me the current best possible choice.

Because it is free and open source, in theory you can use it 'wherever you are', 'forever'.

What if you don't know R yet?

Here is a good opportunity to start those **plans and actions toward learning something new**.

Consult & collaborate

Consulting and collaborating is another good approach to learn.

You will face **new problems**.

You will often **need to learn something new** to be able to tackle such problems.

Even if you can solve a problem with the tools you know, you will have learned something new about their use in each new situation.

Save and invest in 'keeping fit'

Each professional should **take control** of their continued **professional education**.

Saving and investing in your own continued development **does not depend on others**.

Employers may help, but you should not rely solely on them for this.

Programme your savings, and keep to the plan.

Then enjoy the 'freedom' to invest in what you find most profitable or effective.

Above All

Develop an **attitude to learn continuously**.

After all, who can say that what he/she learned at University will suffice for **doing Statistics professionally** after 20 years or 30 years?

Thanks for your attention!