



Development of Curriculum The Case of Official Statistics

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Context

Never has so much been expected from statistics; never have statisticians had such means at their disposal; (Department of Economic and Social Affairs, Statistics Division, 2003, p. 2)

The New York Times

- “I keep saying that the sexy job in the next 10 years will be statisticians,” said Hal Varian, chief economist at Google. “And I’m not kidding.”**

“Statistics is the branch of political science dealing with the collection, classification, and discussion of facts (especially of a numerical kind) bearing on the condition of a State or community.” The Oxford English Dictionary, Second Edition, vol. XVI (New York, Oxford University Press, 1989).

Definitions of Official statistics

Official statistics are statistics published by government agencies or other public bodies such as international organizations. They provide quantitative or qualitative information on all major areas of citizens' lives, such as economic and social development, living conditions, health, education, and the environment.

Three basic characteristics:
objectivity , availability and continuity

Picture of a country

Basic information for decision making

Demand by users for more information has significantly increased

Various Categories

- Demographic statistics
- Social statistics
- Gender and special population groups
- Economic statistics
- Environmental statistics

Users

Three types of users:

- Users with general interest
- Users with business interest
- Users with a research interest

One common point for all these users is their need to be able to trust the official information!

Producers at the national level

- ❖ National statistical institutes (NSIs) or offices (NSOs)
- ❖ Banks
- ❖ Ministries
- ❖ Other central authorities

**Statistical
system of a
country**

National statistical institutes (NSIs) or national statistical offices (NSOs)

- Quality principles
- Foster statistical literacy
- Information materijals
- Terminology
- Metadata
- Which data are official statistics
- Dissemination platforms
- Support and advise other producers
- Advocacy work
- Advice and services
- Training activities

How Should a Modern National System of Official Statistics Look?

- **Fundamental Principles of Official Statistics**
 - **Standards of the IMF (SDDS and GDDS)**
 - **EU Code of Practice**
-
- The degree of centralization varies.
 - Enshrined in and made operational through legislation.
 - Statistical Laws vary in the degree of details .
 - Population and agricultural censuses are frequently based on special laws.
 - At least one major department.
 - The purpose of official statistics is to produce and disseminate authoritative results

The production process in official statistics

Phases:

1. Programming
2. Design
3. Data collection
4. Processing
5. Dissemination
6. Evaluation

- Support processes
- Professional staff
- IT infrastructure

Trust of users

- Confidence
- Fully transparent
- Intensive dialogue

Principles of official statistics

1. **Relevance, impartiality and equal access**
2. **Professionalism**
3. **Accountability**
4. **Prevention of misuse**
5. **Cost-effectiveness**
6. **Confidentiality**
7. **Legislation**
8. **National Co-ordination**
9. **International Co-ordination**
10. **International statistical co-operation**

Principi zvanične statistike (RZS)

1. Zvanična statistika jeste neophodan element u informacionom sistemu demokratskog društva koji snabdeva vladu, ekonomiju i javnost podacima o ekonomskoj, demografskoj i socijalnoj situaciji i stanju životne sredine. U tom cilju zvanične statističke agencije obezbeđuju i na nepristrasnoj osnovi čine dostupnom zvaničnu statistiku koja ispunjava zahtev praktične korisnosti, uvažavajući pravo građana na javnu informaciju.
2. Da bi se sačuvalo poverenje u zvaničnu statistiku, neophodno je da statističke agencije odlučuju o metodima i procedurama prikupljanja, obrade, čuvanja i prezentacije statističkih podataka po strogo profesionalnim kriterijumima, uz poštovanje naučnih principa i profesionalne etike.
3. Da bi se omogućila korektna interpretacija podataka, statističke agencije prezentuju informacije o statističkim izvorima, metodima i procedurama prema naučnim standardima.
4. Statističke agencije su ovlašćene da objašnjavaju pogrešne interpretacije i zloupotrebe statistike.
5. Podaci za statističke svrhe mogu se uzimati iz svih vrsta izvora, bilo da su to statistička istraživanja ili administrativni podaci. Statističke agencije biraju izvore imajući u vidu kvalitet, rokove, troškove i opterećenost respondenata.
6. Individualni podaci koje statističke agencije prikupljaju za statističku kompilaciju, bilo da se odnose na fizička ili pravna lica, strogo su tajni i koriste se isključivo u statističke svrhe.
7. Zakoni, propisi i mere po kojima funkcionišu statistički sistemi moraju biti javni.
8. Koordinacija između statističkih agencija unutar zemalja je suštinska za postizanje konzistentnosti i efikasnosti u statističkom sistemu.
9. Upotreba međunarodnih koncepata, klasifikacija i metoda od strane statističkih agencija u svim zemljama unapređuje konzistentnost i efikasnost statističkih sistema na svim zvaničnim nivoima.
10. Bilateralna i multilateralna saradnja u statistici doprinosi unapređenju sistema zvanične statistike u svim zemljama.

European Statistics Code of Practice (Kodeks prakse evropske statistike)

- Consists of 15 principles
- To improve trust and confidence
- To reinforce the quality



The Code deals primarily with the production of official statistics within the European Statistical System (ESS).

A number of other institutions and bodies outside the ESS provide official statistics at European level.



HANDBOOK OF STATISTICAL ORGANIZATION



Introduction

Handbook of Statistical Organization, Third Edition: The Operation and Organization of a Statistical Agency

- **All sizes and many different shapes**
- **Checklist of items**
- **Today the body of users has expanded**

A. Structure of the statistical system

1. Single institutions

2. More than one institution

Regional decentralization

- Australia
- Germany
- Switzerland
- Spain

In another scenario, the central bank coordinates economic statistics

Importance of brand-name recognition

Usually a stand-alone statistical agency is recognized as an identifiable agency within the central Government.

Existing as a recognizable agency within the Government implies budgetary recognition.

To gain the widest possible recognition, the statistical agency must be visible.

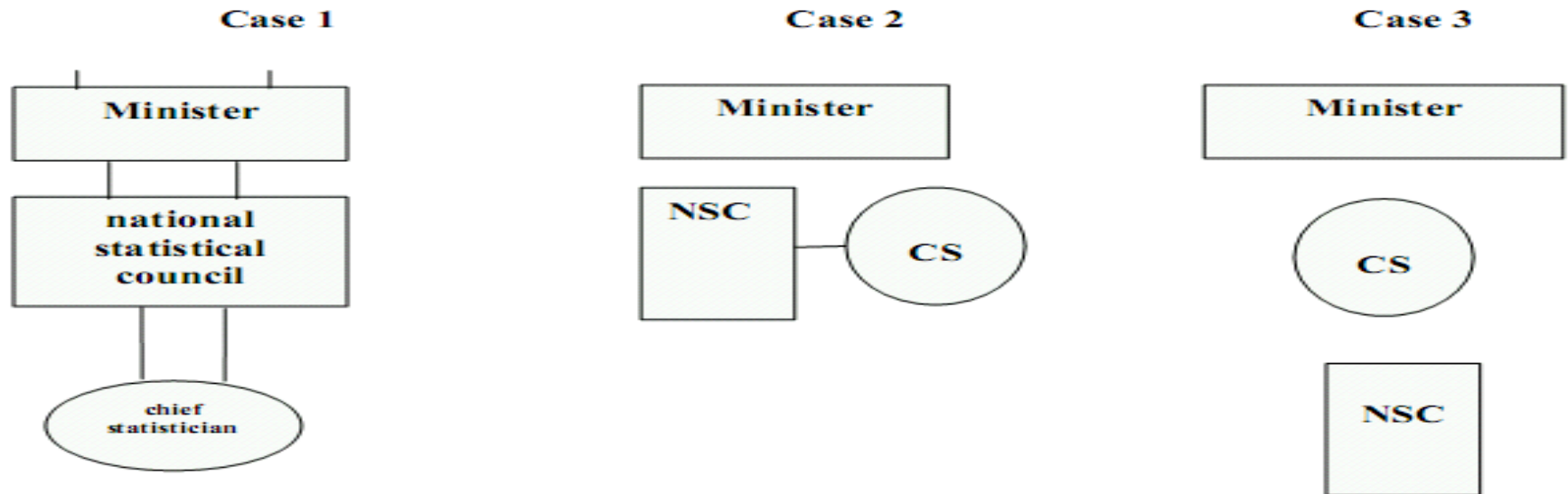
C. The chief statistician

- Assigning top people to it
- Official with whom the chief statistician interacts on a day-to-day basis or on key occasions
- Distinguished professionals
- Excellent managerial instincts
- Needed attributes change over time
- Surround himself/herself with specialists
- Increasing the capabilities of chief statisticians through various forms of international cooperation.

D. The national statistical council

- Composed of representatives of the private sector, the universities and Government

Figure 1. Illustration of three different sets of relationships between the minister, the national statistical council and the chief statistician ^a



Legend

NSC	national statistical council
CS	chief statistician
Minister	elected officer (generally a cabinet officer) responsible for statistical agency

Advisory committees

Keeps official statisticians in close contact with intellectual advances.

Ad hoc bodies

Reserved for crisis situations

E. The law

Laws regarding statistical agencies are largely similar.

F. Financing the statistical system

- Through the government budget
- By selling products and services

Few statistical offices generate more than 10-20 per cent of their income from sales.

III. USERS AND THEIR NEEDS

By and large, statistical agencies are accustomed to converting a general question into one to which a practicable answer can be found.

A. The needs of Government

A statistical agency should ensure that the most efficient arrangements are in place to gather core information and that the ministries have access to specialists who will participate in the dialogue on the areas of particular interest.

B. The needs of the public

1. The community at large
2. Schools and high schools
3. The press

C. The needs of business

Similar interests in quantitative information

The fundamental questions are: How many businesses like ours exist? How do they compare to us? What are the prospects for our business and for those with similar attributes?

Large businesses

- degree of similarity with those of a ministry of finance
- special unit

Small businesses

- greatest challenge, The ratio is almost as high as that for households
- undeniable importance
- specialized consultants
- unit within the statistical agency

D. Research and other needs

- Academic world can place burdensome demands
- Helping evaluating the quality
- A liaison with academic researchers
- Programmes that allow for an interchange with university researchers

International institutions - the most important source of conceptual and methodological guidance

IV. SETTING PRIORITIES

Analysis of the costs and benefits

- A. Analysis of user requirements
 - Should there be a planning unit?
 - A statistical agency will not change its agenda by more than a small fraction of its total resources
 - Tracking costs for planning purposes

VI. MANAGING STAFF

Taken for granted in earlier times, and is now perceived as critical.

Statistical operations require a mix of talent, including economists, sociologists, demographers, econometricians, model builders, geographers, anthropologists, criminologists, engineers and computer experts.

Multi-talented staff with a broad range of academic skills and work experience.

Professional staff can often be divided into two categories:

- General personnel
- Specialized personnel

X. FIELD ORGANIZATION

Key participant in a standing committee

Several classes of respondents:

- households,
- enterprises,
- Governments,
- non-commercial institutions
- foreign institutions.

XI. GETTING INFORMATION TO THE USERS

A. General dissemination issues

- involvement of intermediaries
- metadata
- statistical agency cannot adopt a laissez-faire attitude
- benefits of a predefined schedule of statistical releases
- clear policy regarding the selection of data for distribution
- Internet has blurred the edges of what used to be a fairly straightforward policy

XII. RESPECTING PRIVACY AND PRESERVING CONFIDENTIALITY: HONOURING THE CONTRACT

A. Respondent policies

1. Principles of respondent relations:

- a) The purpose of the data collection must be clear and meaningful to the respondent
- b) The statistical agency must be perceived as holding in the strictest confidence
- c) The statistical agency must be seen as willing to accommodate respondents
- d) The professionalism and objectivity of the statistical agency, as well as its freedom
- e) The statistical agency should be perceived as thoughtful and concerned in matters relating to response burden
- f) The way in which the information is collected must reflect the ways in which businesses keep records
- g) Same terminology used in daily business operations

B. Data protection

Two perimeters that must be protected: physical and virtual

C. Confidentiality and disclosure

The general principle is that whatever is requested by one user is available to all.

- Precautions
- More opportunities for accidental disclosure
- Longitudinal studies
- Disclosure with consent
- Forced disclosure (State monopolies and industries)
- Arrangements for research (“sterile chamber”)



Statistical Systems



International statistical systems

Statistical division (UN)

OECD

РЗС - Републички завод за статистику



Narodna banka Srbije



The European Statistical System

The ESS is the partnership between the Community statistical authority, which is the Commission (Eurostat), and the national statistical institutes (NSIs) and other national authorities responsible in each Member State for the development, production and dissemination of European statistics.

Coordinates its work with candidate countries.

EUROSTAT

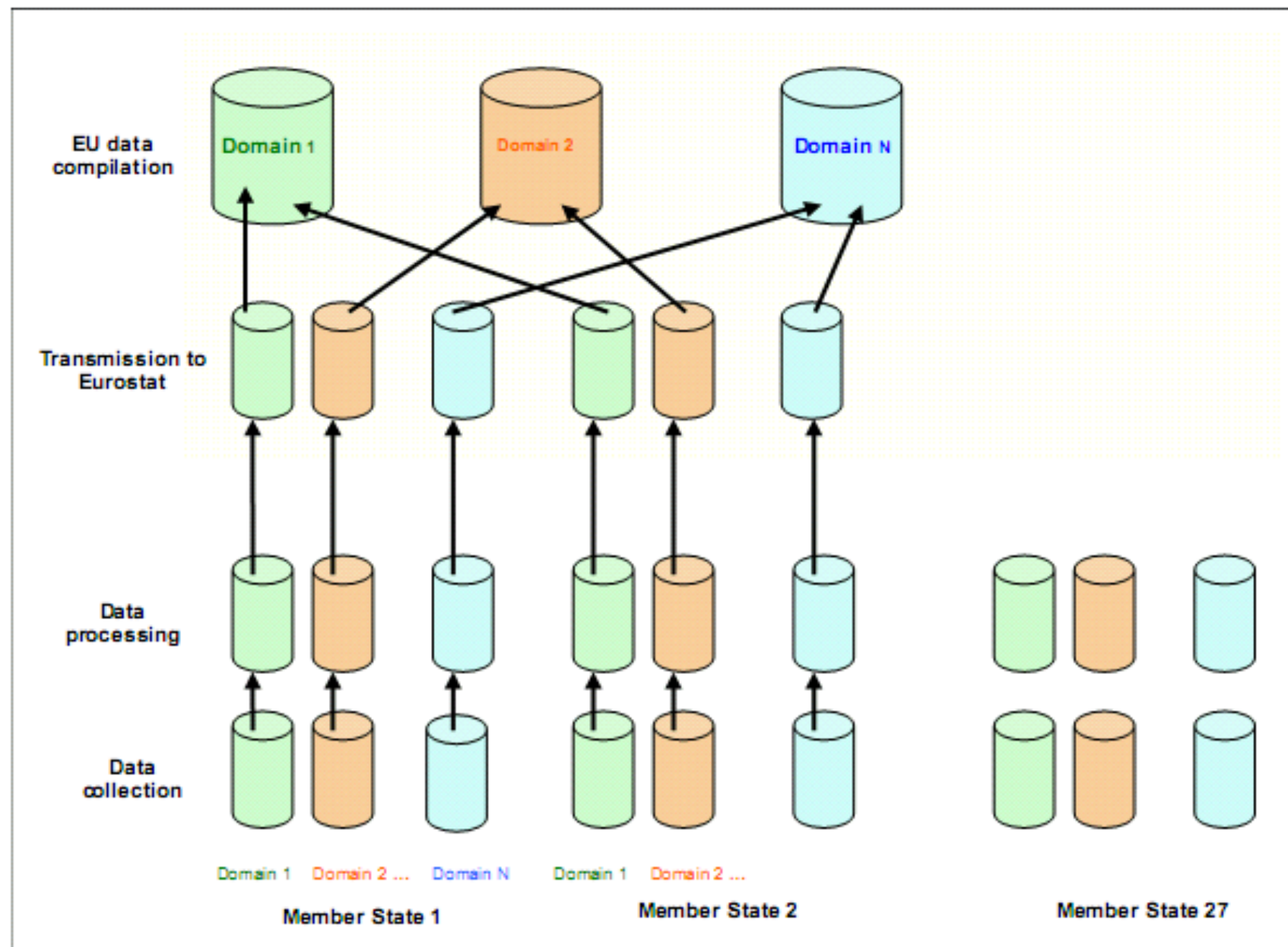


Comparing apples with apples

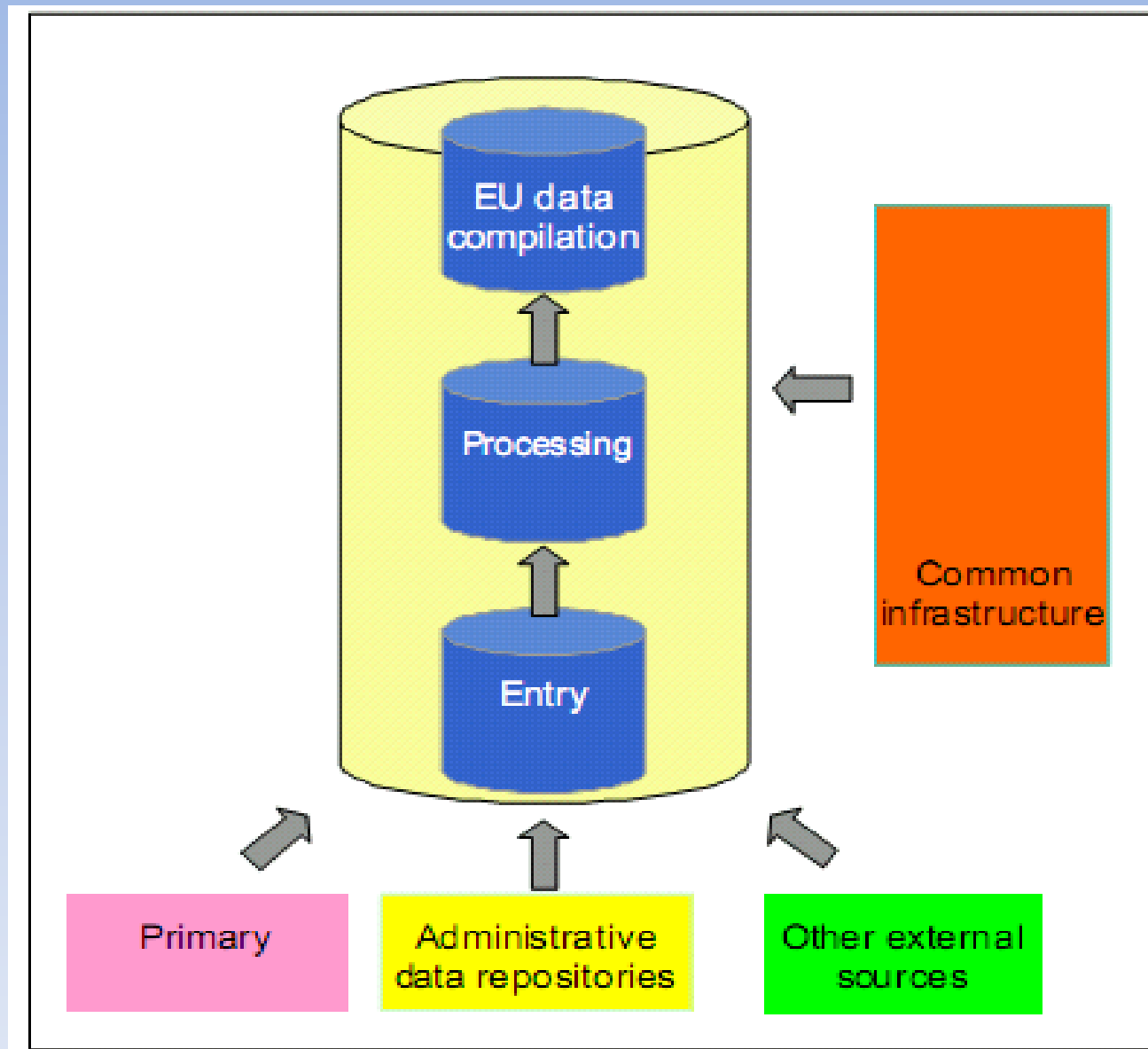
Eurostat's main role is to process and publish comparable statistical information at European level.

Eurostat does not collect data.

The "augmented" stovepipe model



The integrated model



Making Data Meaningful

Part1

Writing Stories About Numbers

Part2

A Guide to Presenting Statistics

Part3

A Guide to Communicating with Media

Readers tend to recall ideas more easily than they do data.

Statistical story-telling is about:

- catching the reader's attention with a headline or image;
- providing the story behind the numbers in an easily understood, interesting and entertaining fashion;
- encouraging journalists and others to consider how statistics might add impact to just about every story they have to tell.

Write like a journalist: The “inverted pyramid”

Conclusions at the top of the news story...

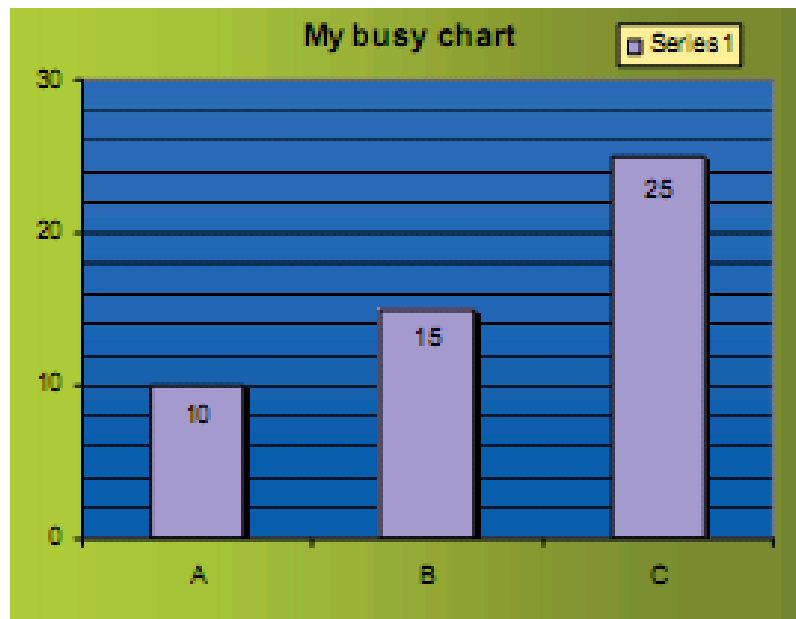
The bonus is that the media are more likely to use the information.

Graphs

Good statistical graphics:

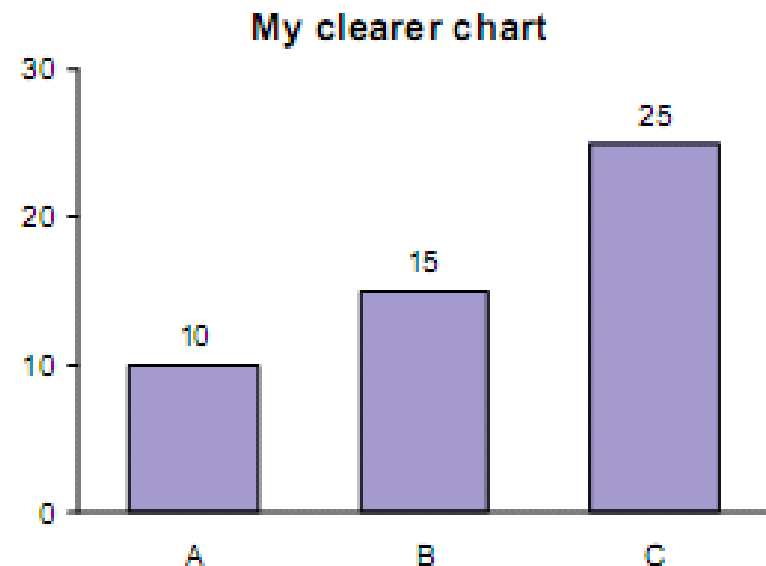
- Show the big picture by presenting many data points;
- Are “paragraphs” of data that convey one finding or a single concept;
- Highlight the data by avoiding extra information and distractions, sometimes called “non-data ink” and “chart-junk”;
- Present logical visual patterns.
- Let the data determine the type of graph

BAD EXAMPLE



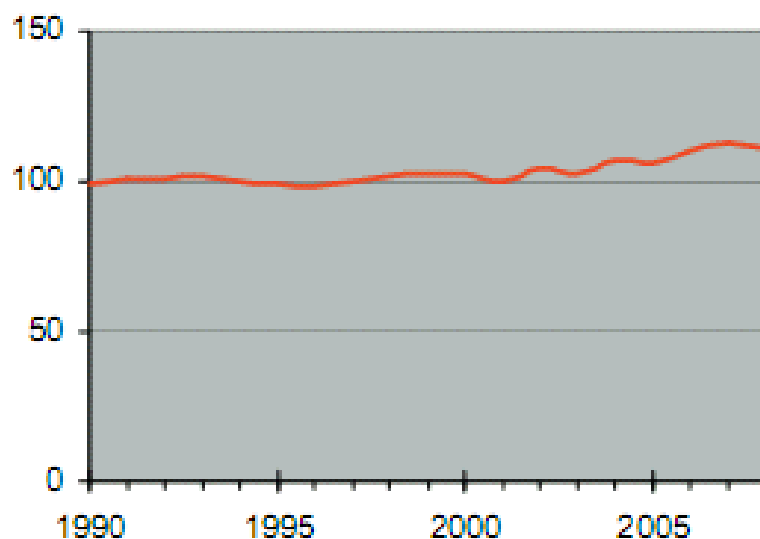
All components have maximum impact. The result is a busy chart, difficult to read, even though it shows only three values.

GOOD EXAMPLE

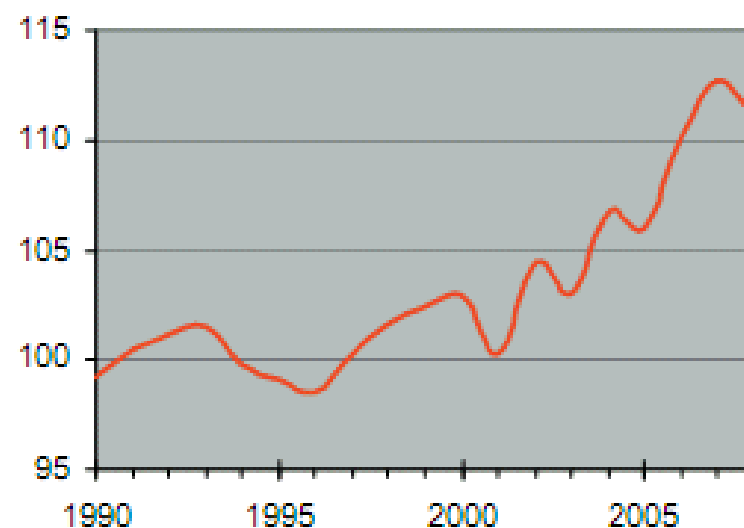


This chart is much easier to read. Minimal use of support components ensures that data take centre stage.

4.6 Adjusting the chart parameters



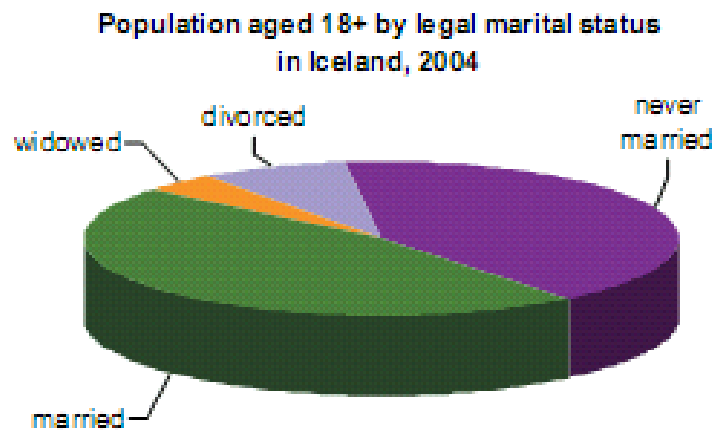
This chart shows an overall trend of stability for about 10 years, followed by moderate growth.



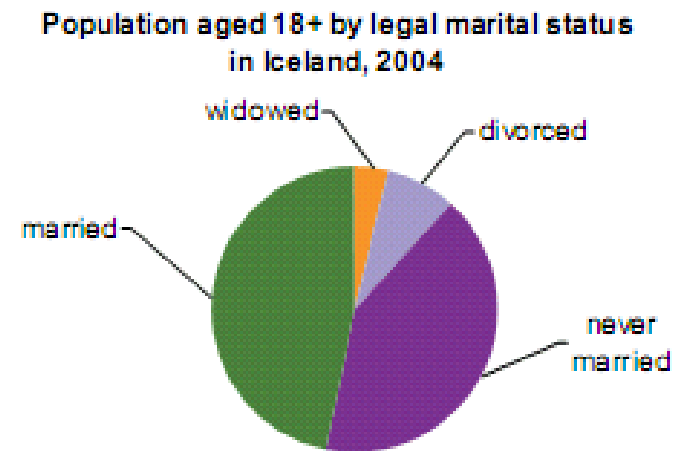
By reducing the scale on the y-axis, you can highlight the changes. Small increases and decreases appear in the first 10 years and the growth at the end of the period seems more dramatic.

Avoid unnecessary graphic features

BAD EXAMPLE



GOOD EXAMPLE



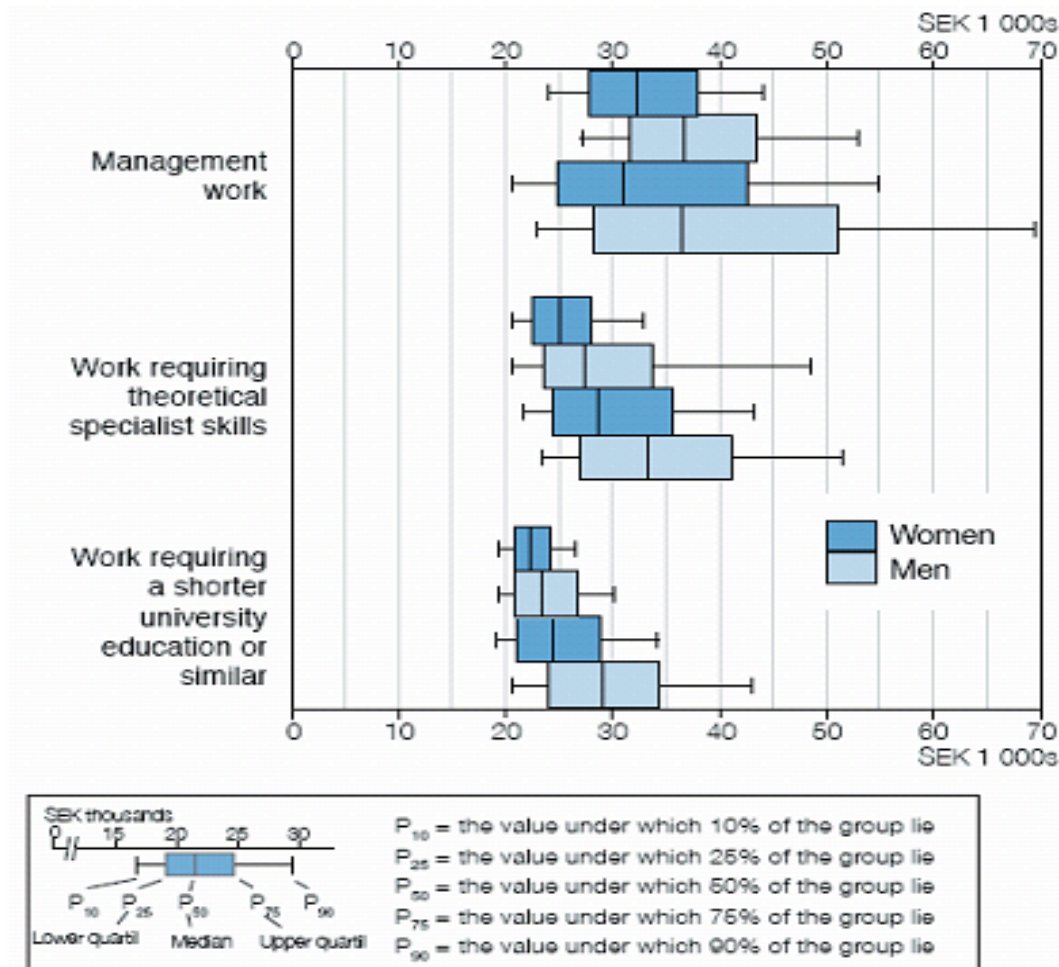
4.7 Controlling the cognitive load of your charts

GOOD EXAMPLE of a chart with a high cognitive load

Wage dispersion in occupational groups that require higher education in Sweden, 2004

Monthly salary in Swedish Krona (SEK)

The two upper bars in each occupational group show women and men in the public sector, the two lower bars show the private sector.



Source: Statistics Sweden (2008), *Women and Men in Sweden: Facts and figures 2008*⁹.

Tables

- Good tables complement text.
- One decimal place will be adequate.
- Two decimal places...

Race of Juvenile Offenders ⁴	
Race of juvenile offender(s)	Average annual percent of violent crimes committed by juvenile(s)
Total	100.0%
White	59.1
Black	25.2
Other	11.4
More than 1 racial group	2.6
Unknown	1.7

⁴ Source: Baum, K. (2005), "Juvenile Victimization and Offending, 1993-2003", in *Bureau of Justice Statistics, Special Report*, U.S. Department of Justice, Office of Justice Programs, available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/jv03.pdf>.

5. Maps

5.1 Why a map is worth a thousand numbers

Maps are the most efficient tools to visualize spatial patterns.

- Geographic information systems (GIS)
- Cartographic information systems (CIS)

6.4 Web 2.0 and building communities around data

6.5 Other new visualization techniques

Sparklines

Sparklines are small, word-sized line charts that show trends over time.

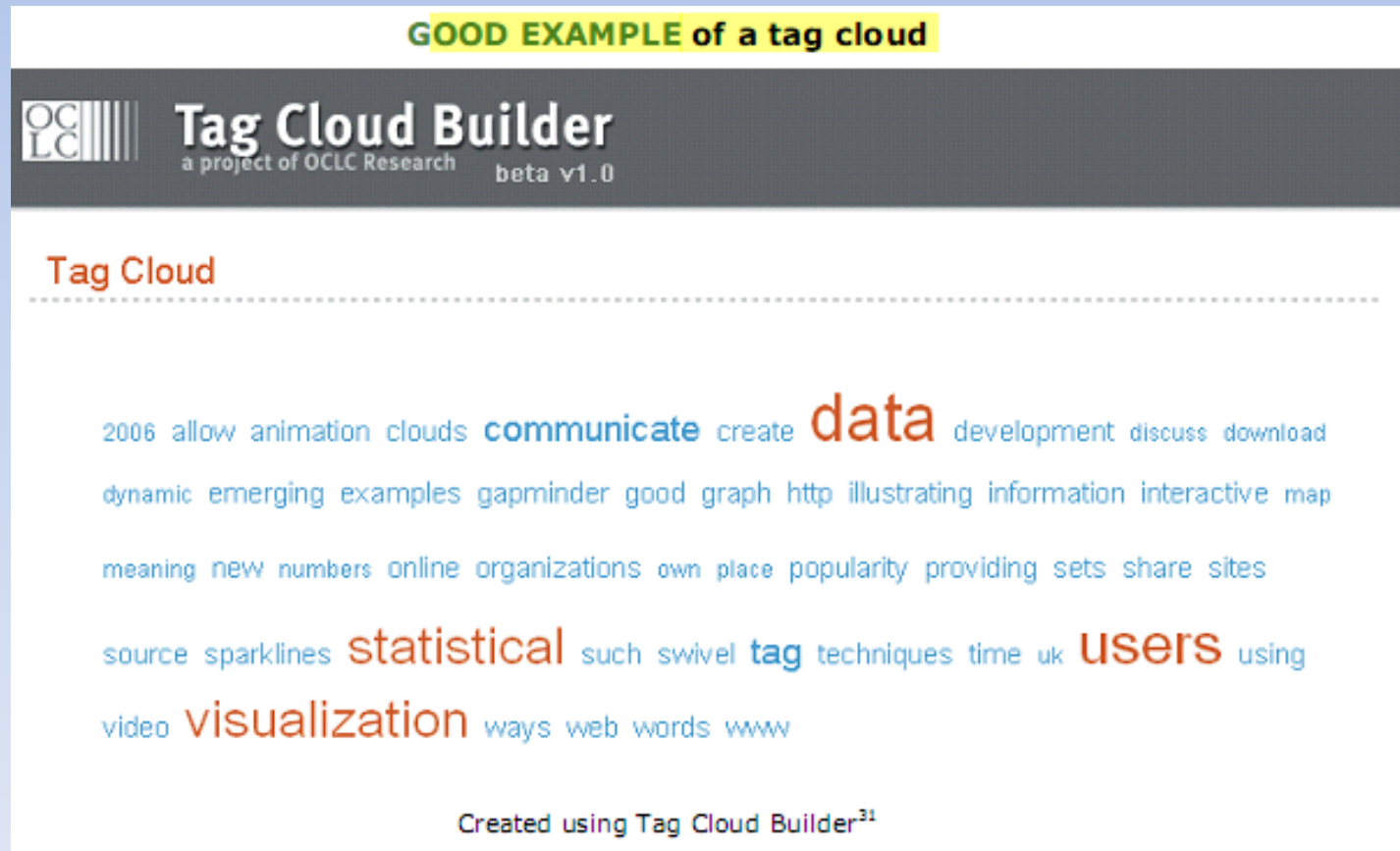
GOOD EXAMPLE of a sparkline



Source: Tufte, E.R. (2006), *Beautiful Evidence*, Cheshire CT, Graphics Press.

Tag clouds

A tag cloud (sometimes also called a word cloud) is a visual representation of the frequency of a word or tag in a particular text or dataset.



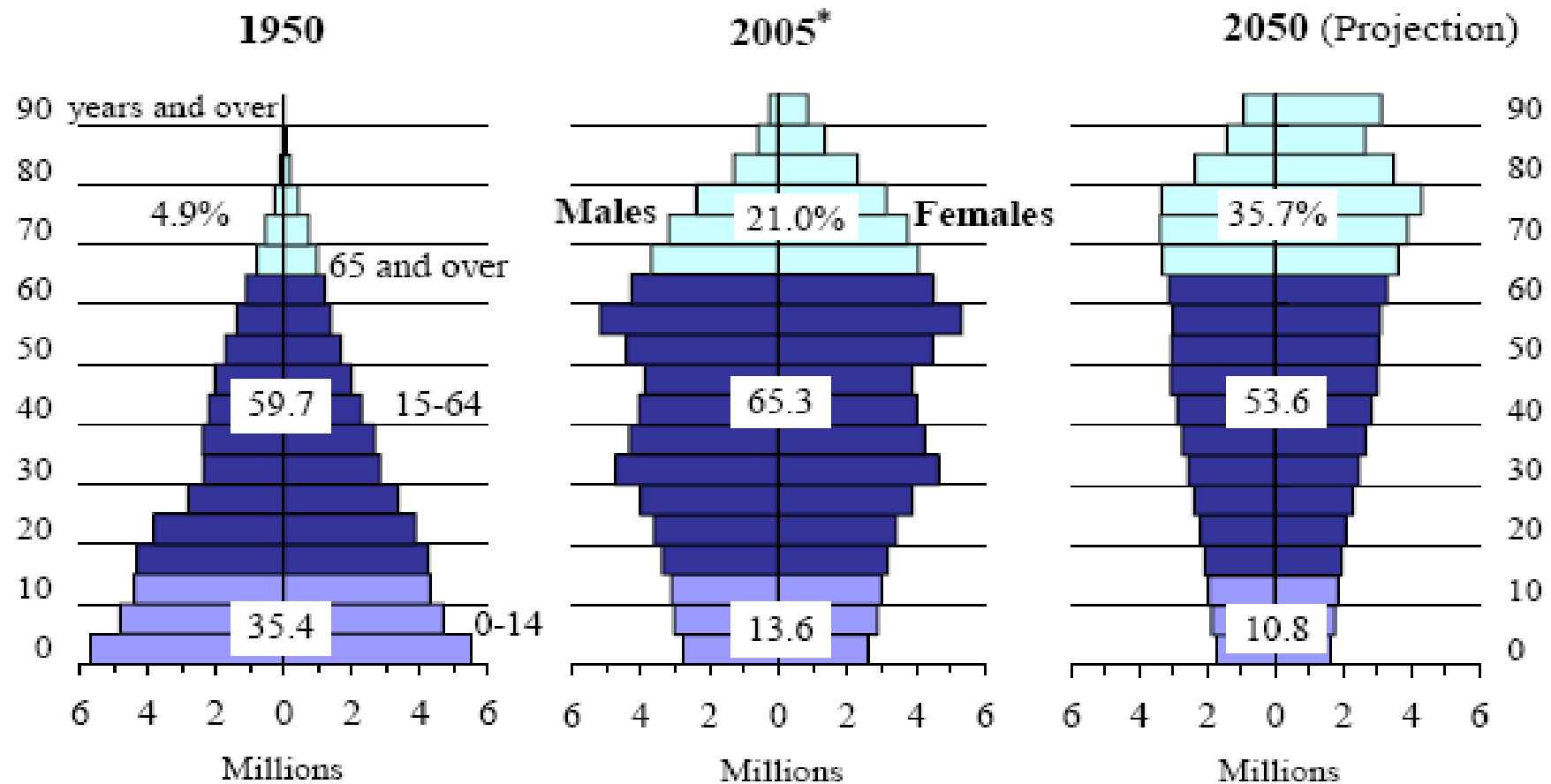
6. Evaluating the impact

Media analysis

- Keyword searches to measure extent of media coverage;
- Total coverage for a pre-determined period of time;
- Daily coverage to identify spikes;
- Comparing coverage to established baselines;
- Prior releases of the same data product;
- Qualitative methods to analyse media coverage;
- Correct interpretation of the numbers;
- Coverage of target audiences;
- Inclusion of key story-line messages;
- Inclusion of core corporate messages;
- Effective use of illustrative embedded graphics;
- Tone of story (positive/negative);
- Tone of quotes from external spokespersons (positive/negative).

Demographic dividend...

Changes in the Population Pyramid



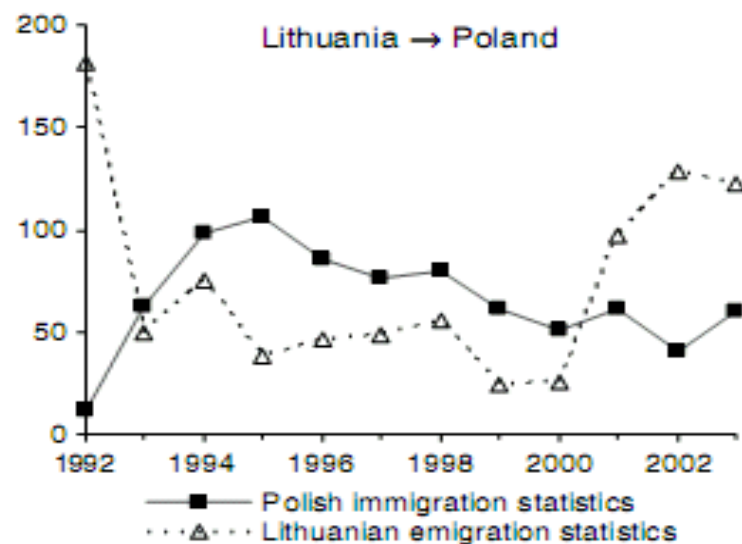


Figure 3.1 Migration flows from Lithuania to Poland according to data from the receiving and sending country.

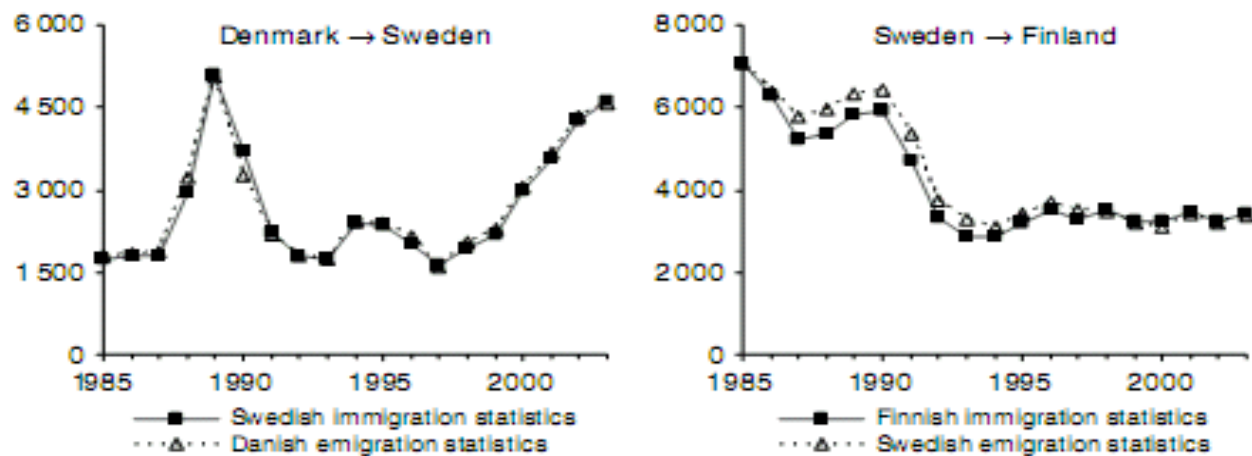
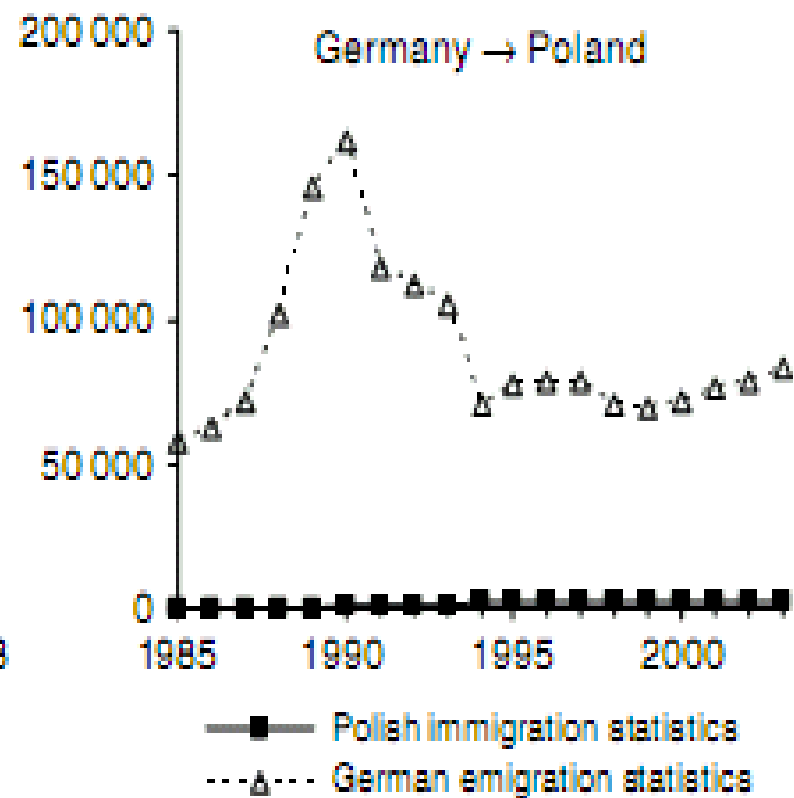
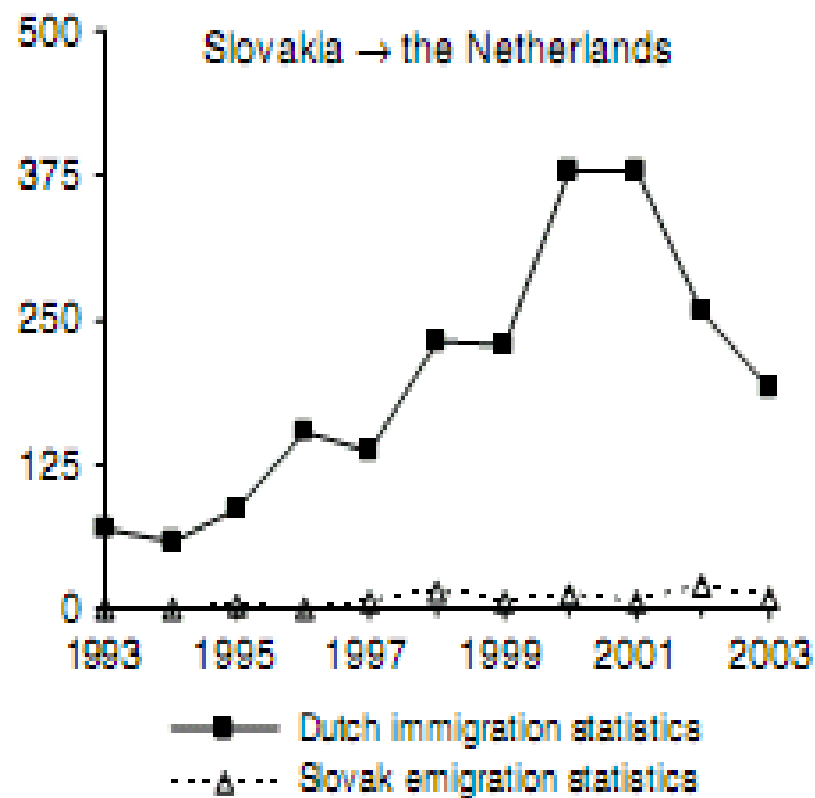


Figure 3.2 Migration flows from Denmark to Sweden and from Sweden to Finland according to data from the receiving and sending country.



Thank you for your attention!