

# Statistical Analysis

Are statistics really that difficult?  
Can church statistical reports be  
more meaningful?

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General Conference of Seventh-day Adventists

At the fourth GC Session in May 1866, the Session voted as follows:

RESOLVED, That the delegates from each state conference should . . . furnish to the General Conference the statistics of their respective conferences; and [that] the secretaries of the several conferences . . . furnish the delegates of their own conferences, such statistics, specifying the number of ministers and licentiates, the number of churches, the number of the membership, and the total amount of their systematic benevolence fund, etc.

## . Fifth GC Session, May 1867:

- **The first annual statistical report was presented**
- 4,320 members; in
- 160 churches;
- Gave \$18,661.39
- 28 ordained ministers
- 10 licensed ministers

# First GC Session, May 1863

- Churches of the Michigan Conference presented detailed reports.
- Report from Battle Creek SDA church:
  - “This church was organized Oct. 24, 1860, with seventy-two members. Admitted since, thirty-six. Removed nine. Deceased two. Membership at present, ninety-seven.”

Adventist World Statistics

www.adventiststatistics.org

SEVENTH-DAY ADVENTIST CHURCH

ASTR HOME DIRECTORY YEARBOOK ONLINE ARCHIVES STATISTICS

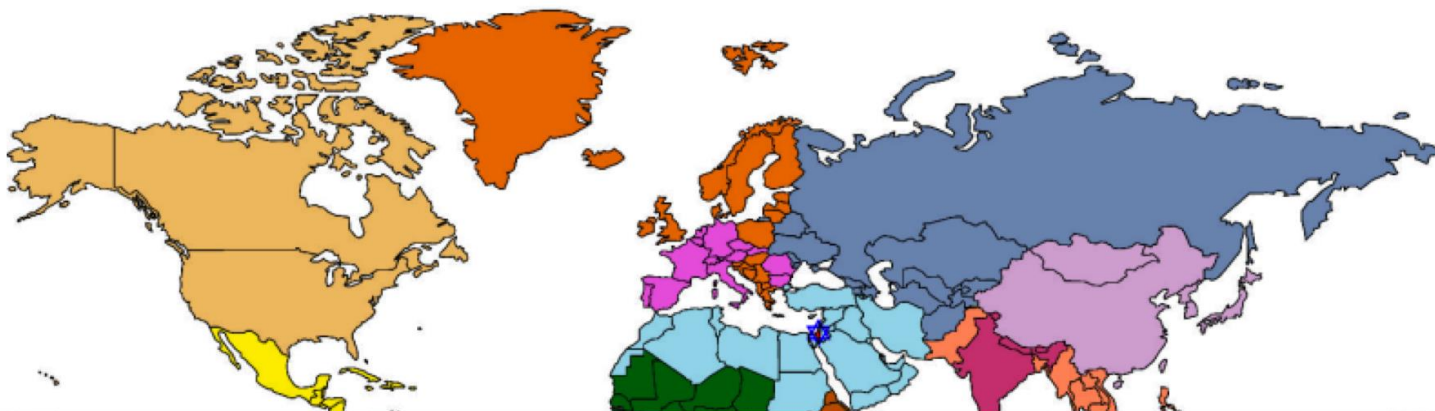
**astr**  
Office of Archives, Statistics, and Research

Search for any Division, Union or Local Field:  Search

The 2013 Annual Statistical Report Supplement is now Available

## Browse by Adventist World Divisions

### General Conference (World Church Statistics)



[www.AdventistStatistics.org](http://www.AdventistStatistics.org) — download statistics, for any area or period, straight into Excel

#### CURRENT STATISTICS

- ▶ 2013 Annual Statistical Report
- ▶ 2013 Annual Statistical Report Supplement

#### 2012 ANNUAL COUNCIL

- ▶ Report
- ▶ World Statistics
- ▶ Interesting Facts
- ▶ 2010 GC Session Report

#### LINKS

- ▶ Statistical Documents
- ▶ Annual Statistical Reports
- ▶ Statistical Office Information
- ▶ Statistical Maps

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# Terms used in statistical analyses

- **Average**
- **Percent**
- **Ratio**
- **Per capita**
- **Common currency**

# Terms used in statistical analyses

- ◎ **Average – Measure of central tendency**
  - **Mean – arithmetic average (most commonly used)**
    - E.g., average Sabbath attendance in church or Sabbath School
  - **Median – the middle number of a distribution**
  - **Mode – the number occurring most often**

# Terms used in statistical analyses

## ◎ Percent

- A value between 0 and 100 that indicates the proportion of an amount if it were a part of 100 such items
- The ratio of an item to the whole amount

## ◎ Ratio: the quantitative value of the relationship between two numbers, often expressed as a percentage



# Terms used in statistical analyses

- Per capita – Value for each person
- Tithe per capita – derived by dividing the amount of tithe received by the number of members (note the basis for per capita calculations – the membership at the mid-point of the previous year)
- Or: Accessions could be calculated per capita of membership in a similar way

# Comparison of Mean and Median

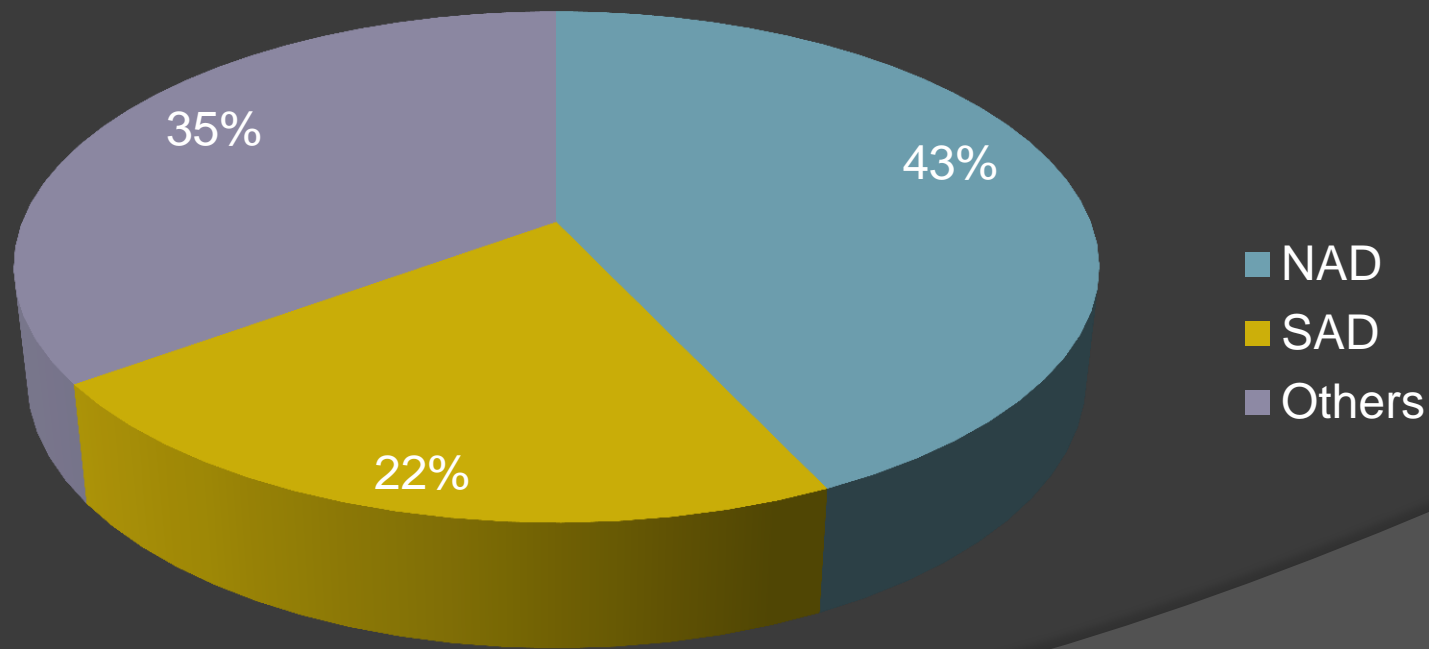
## West Indonesia Union Mission Tithe 2013

|      | Tithe per capita – 2013<br>(US\$) |      | Tithe per capita – 2013<br>(US\$) |
|------|-----------------------------------|------|-----------------------------------|
| CJM  | \$79.07                           | WKAD | \$32.88                           |
| CSM  | \$134.14                          | NSM  | \$73.27                           |
| EJC  | \$145.23                          | SSM  | \$74.29                           |
| EKM  | \$361.70                          | CJM  | \$79.07                           |
| JC   | \$213.38                          | NTM  | \$85.46                           |
| NSM  | \$73.27                           | WJC  | \$125.59                          |
| NTM  | \$85.46                           | CSM  | \$134.14                          |
| SSM  | \$74.29                           | EJC  | \$145.23                          |
| WJC  | \$125.59                          | JC   | \$213.38                          |
| WKAD | \$32.88                           | EKM  | \$361.70                          |

Mean - \$144.26 – Median - \$105.54

# Example of graphing percentages rather than actual numbers

## Total World Tithes and Offerings, 2013



# Statistics: Context is all important

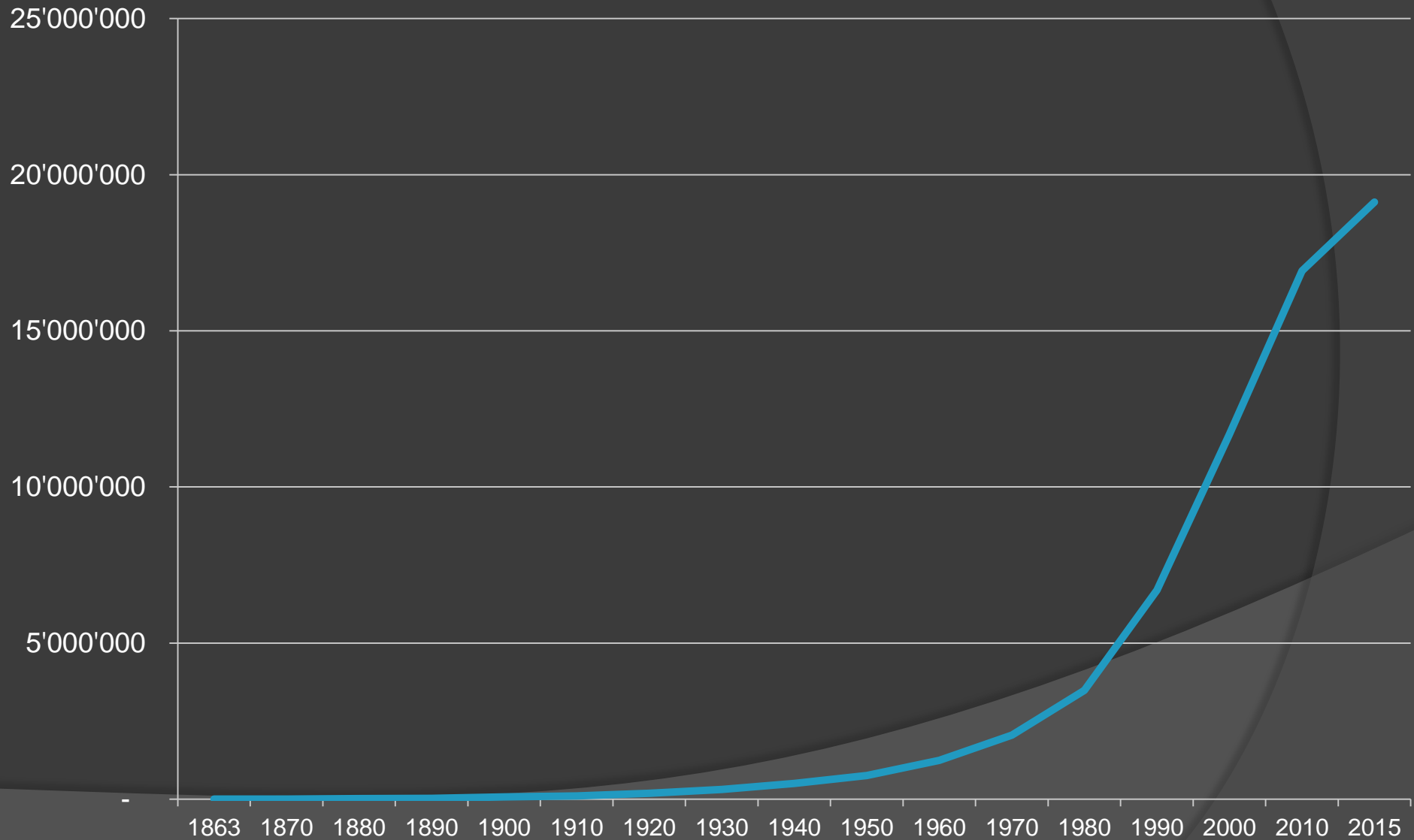
- “Lies, damnable lies, and statistics”
- Too often statistics are used to distort & even to deceive
- Sometimes we deceive ourselves!
- But used rightly, they are a powerful tool

# Statistics: Context is all important

- Look at statistics in different ways
- Best seen in long-term perspective, not just for one or even two years
- Look for trends
- Statistics have to be seen in context, which means comparison
- Surveys are valuable as well as actual data

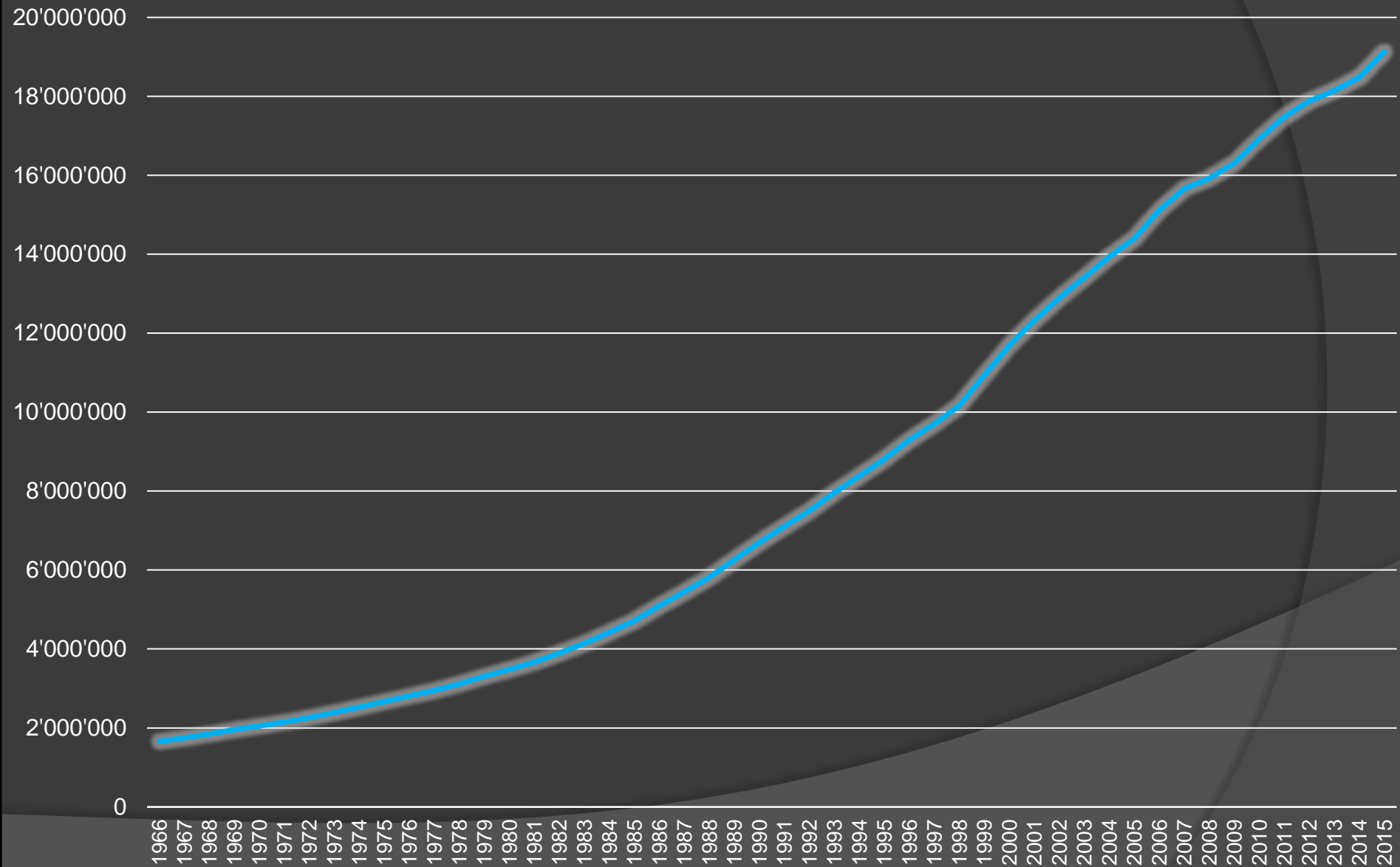
# 150-year chart of membership

Reported SDA Membership



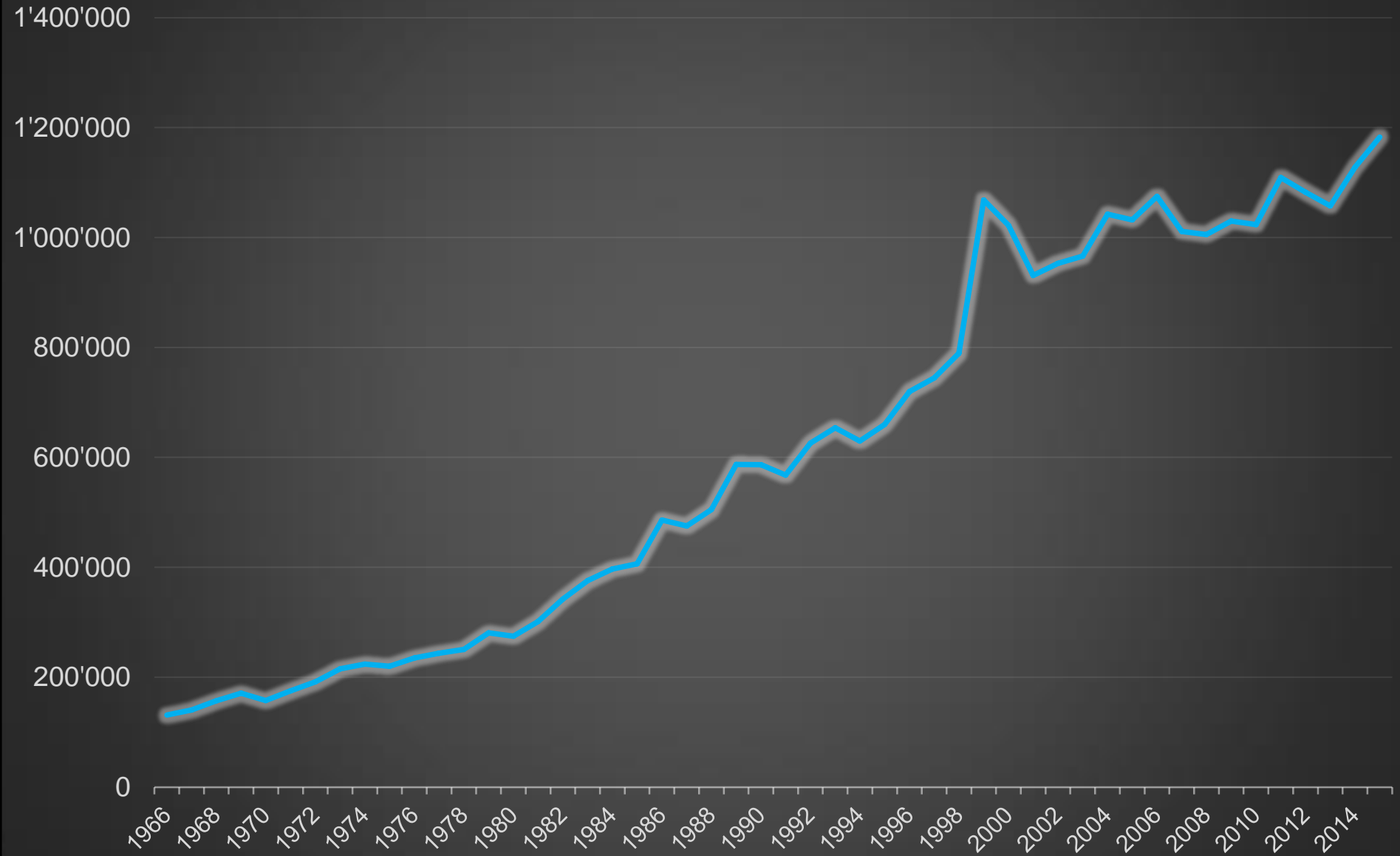
# 50-year chart of membership

## World Membership, 1966–2015



# 50-year chart of total accessions

## World Baptisms, 1966–2015





# Using church statistics: Trend analysis

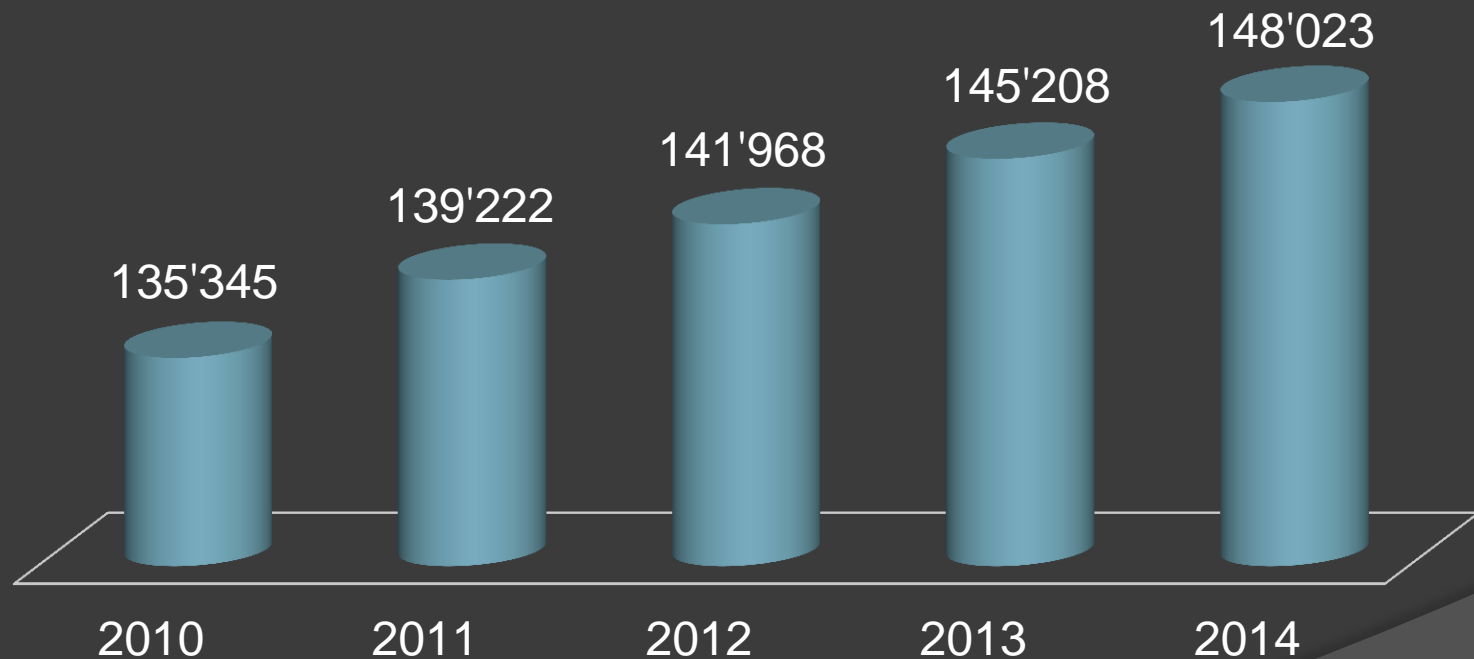
- ◎ Identify trends over time
  - Is there change?
  - In what direction?
  - Does the direction allow projections for the future?

# Using church statistics: Trend analysis

- Trends can be membership, number of churches, tithes/offerings, pastors/other workers, school enrollment, institutions, or anything quantifiable

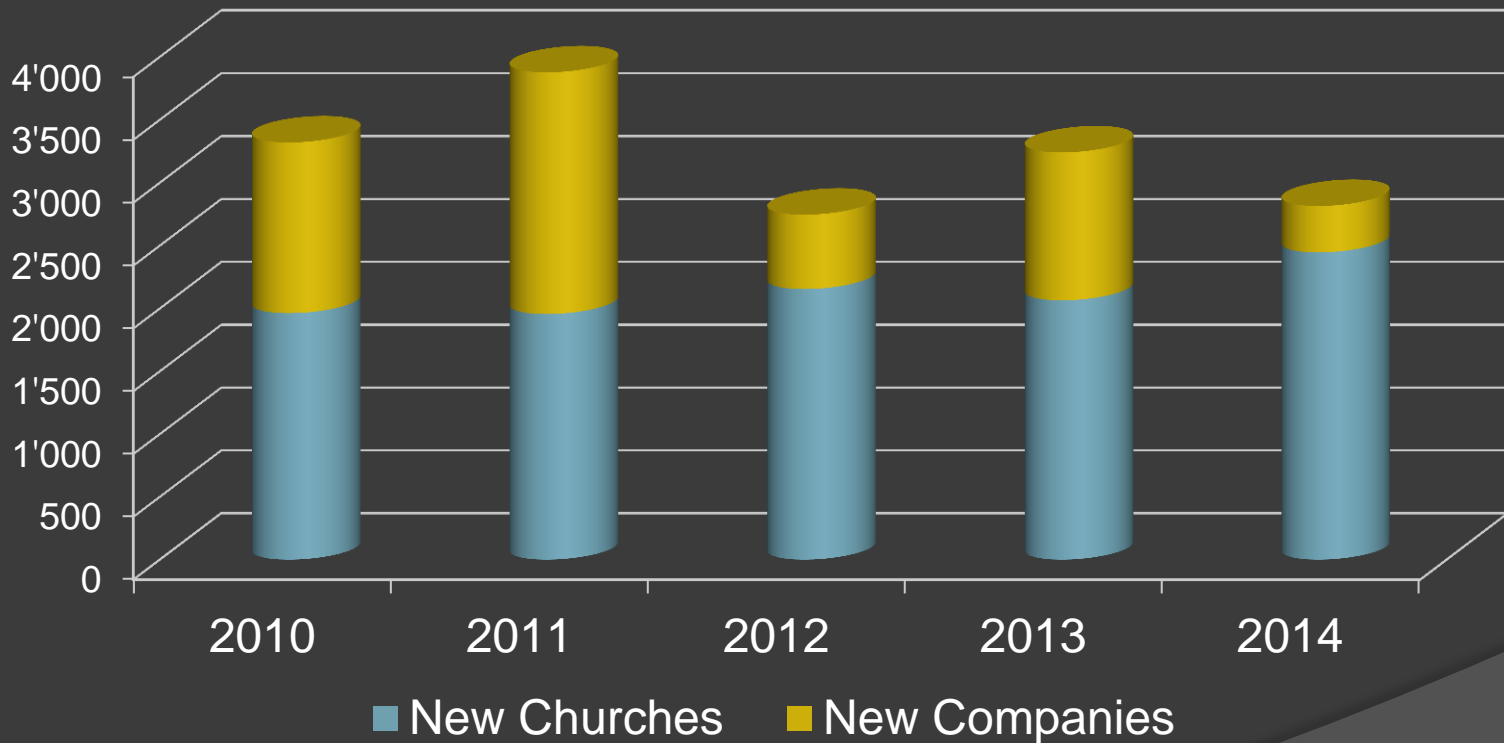
# Example of a trend

## Total Number of Congregations



# What is the trend?

## New Congregations Organized each Year



# Using church statistics: Contextualise

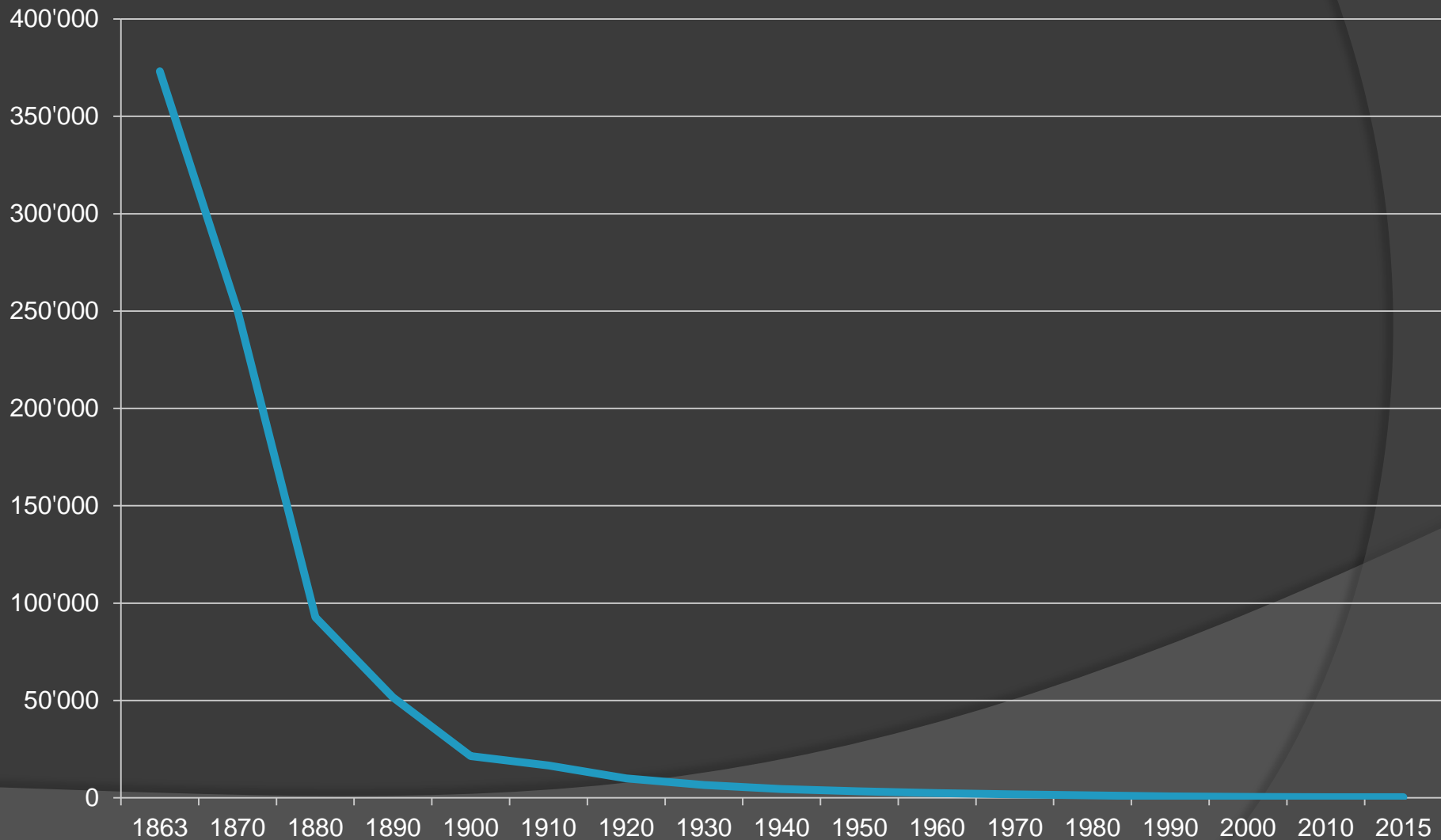
- ⦿ Compare statistics of different types
- ⦿ Compare two or more numbers – such as membership in one division vs. another division, or in the unions within a division

# Using church statistics: Contextualise

- ⦿ Compare the same types of number and same periods, but for different areas or institutions
- ⦿ Use actual numbers *and* percentages—and compare the two

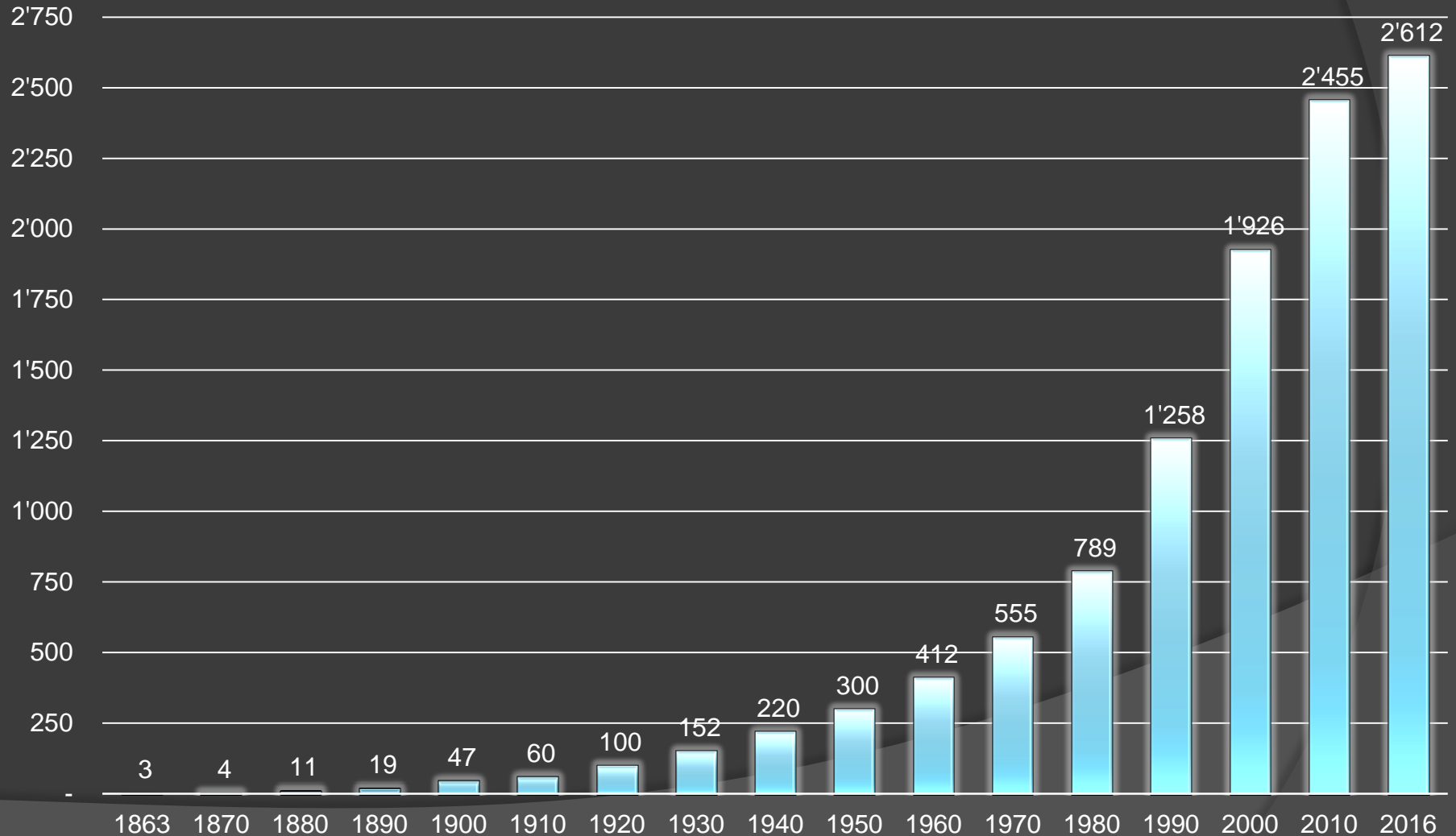
# Membership figures in context: 150-year chart, members vs. population

**Number of non-Adventists to Adventists globally, 1863–2015**



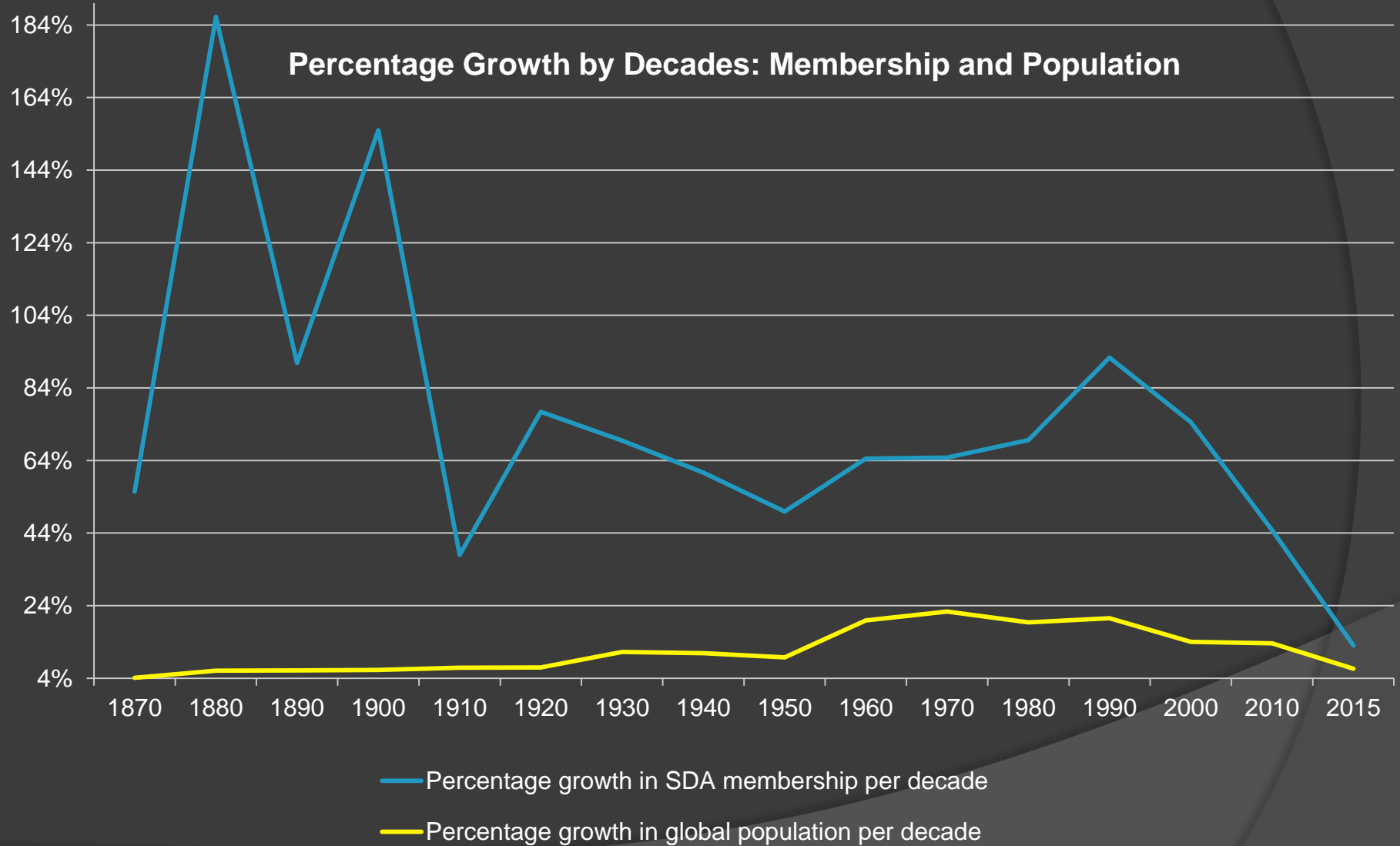
# Membership figures in context: 150-year chart, members vs. population

SDAs per million of population, June 1863–June 2016



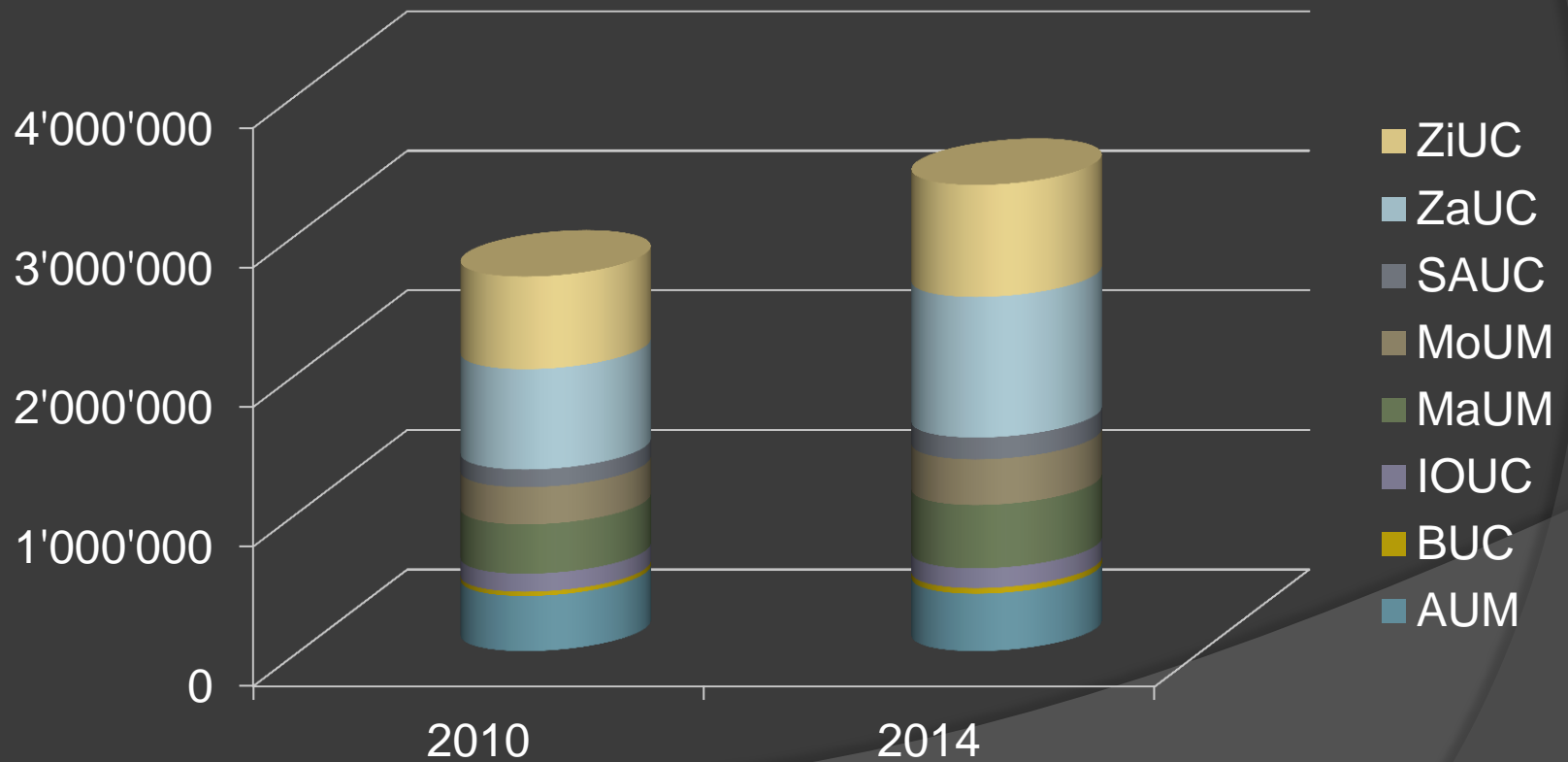


# Membership figures in context: Percentage growth: 150-year chart



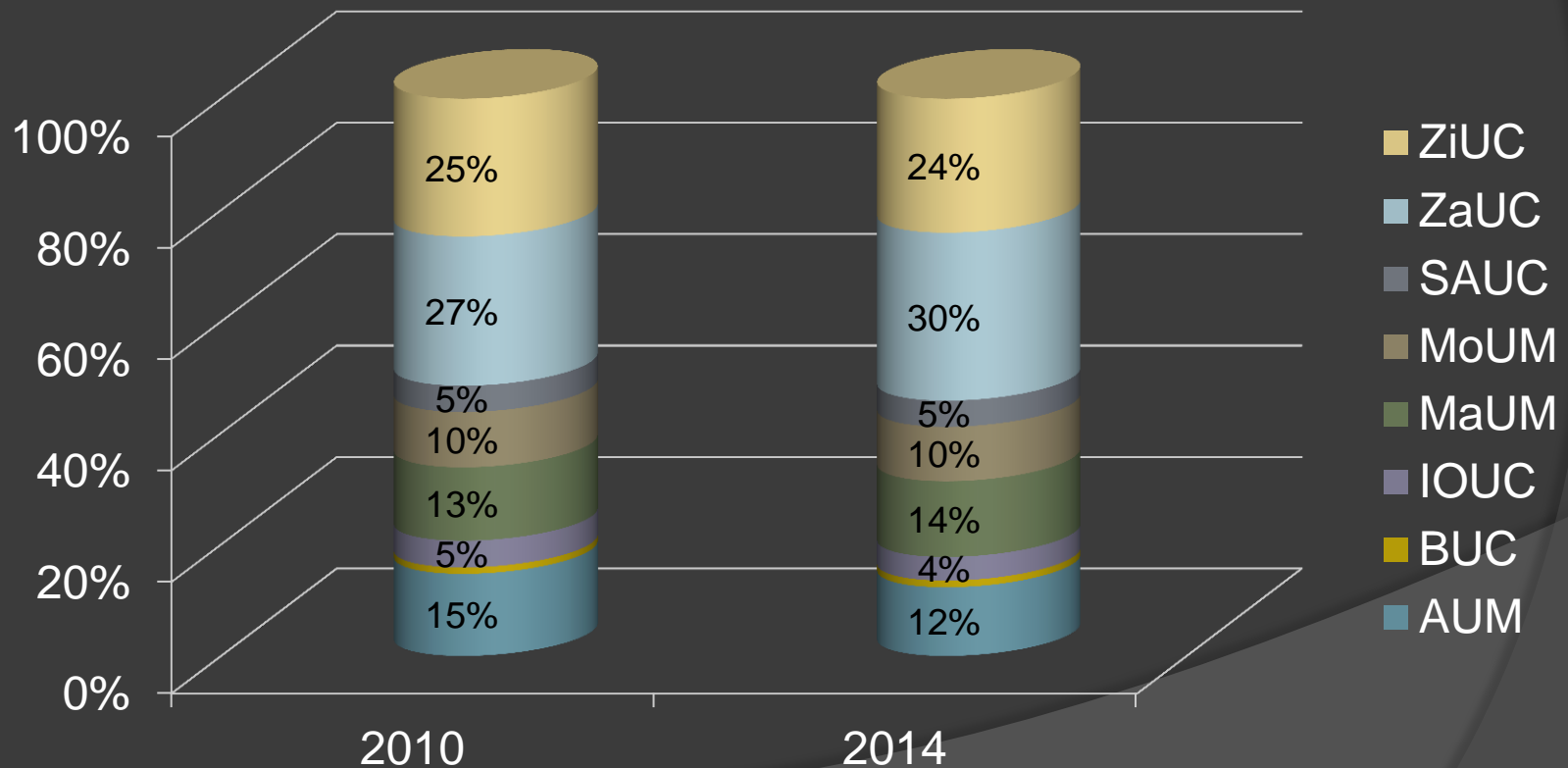
# Example of comparisons

Membership by union – Southern Africa-Indian Ocean Division



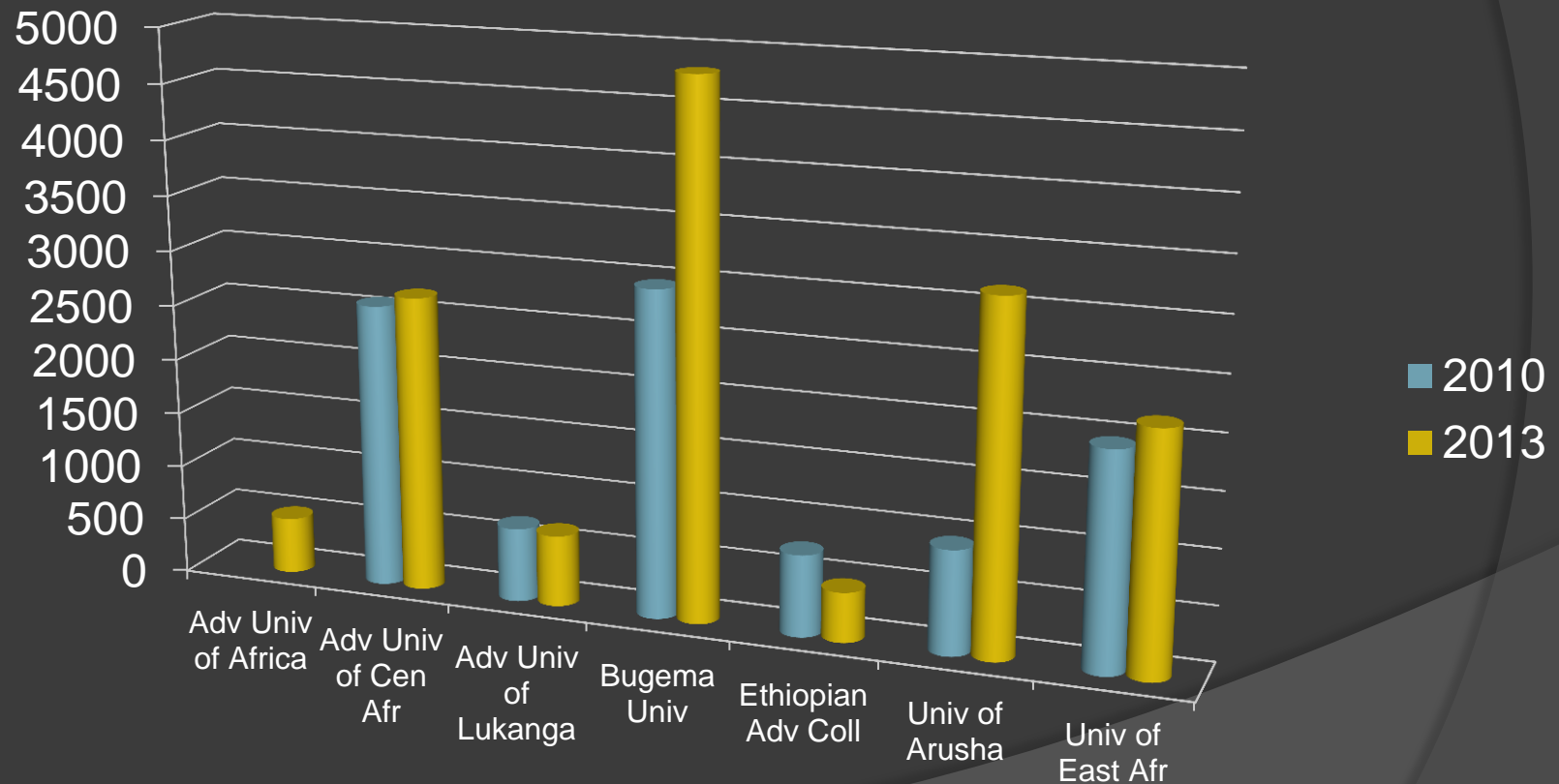
# Example of comparisons

Membership by union as a percent of division total –  
Southern Africa-Indian Ocean Division



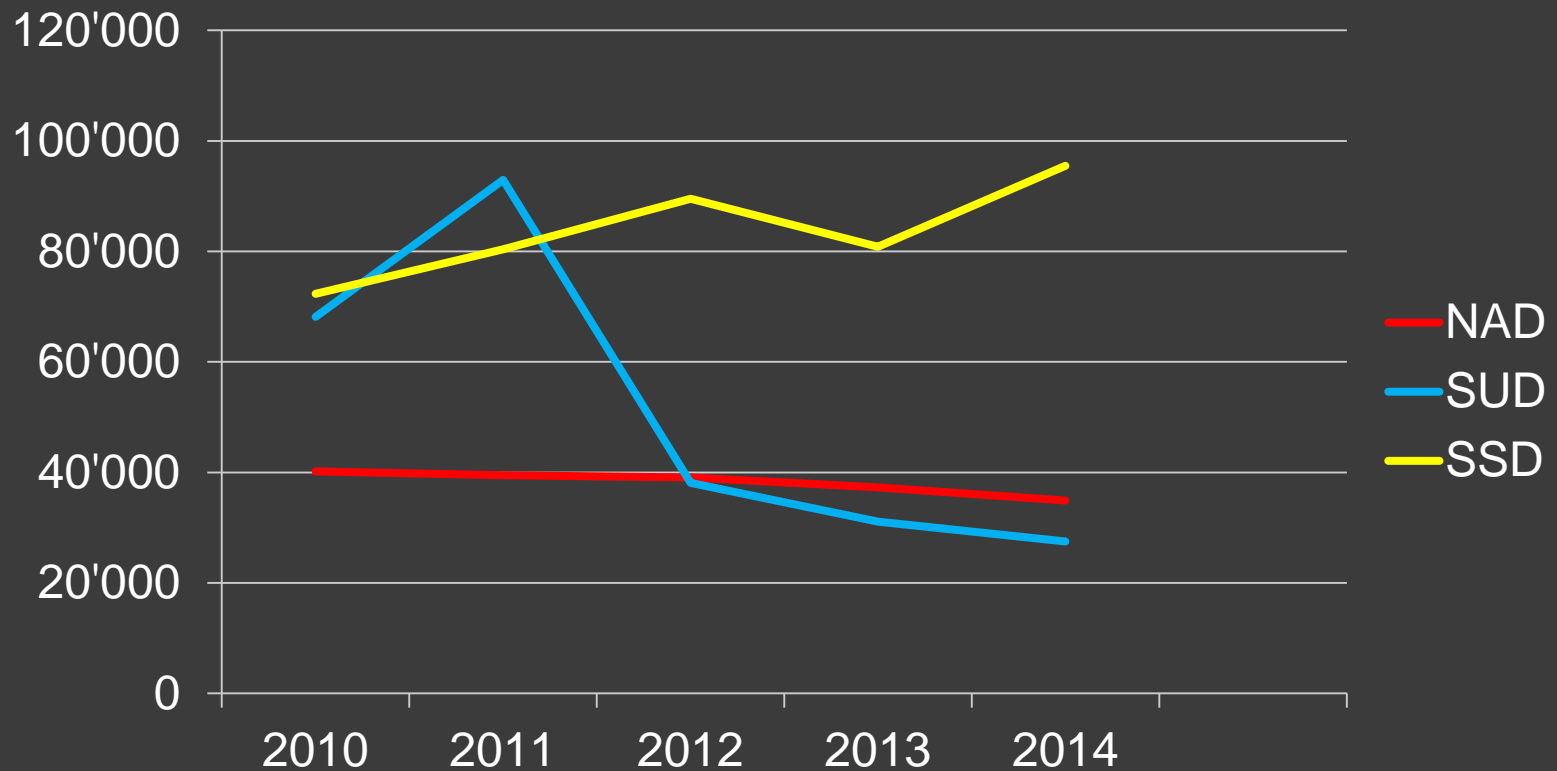
# Example of a comparison

Tertiary institutions in East-Central Africa Division

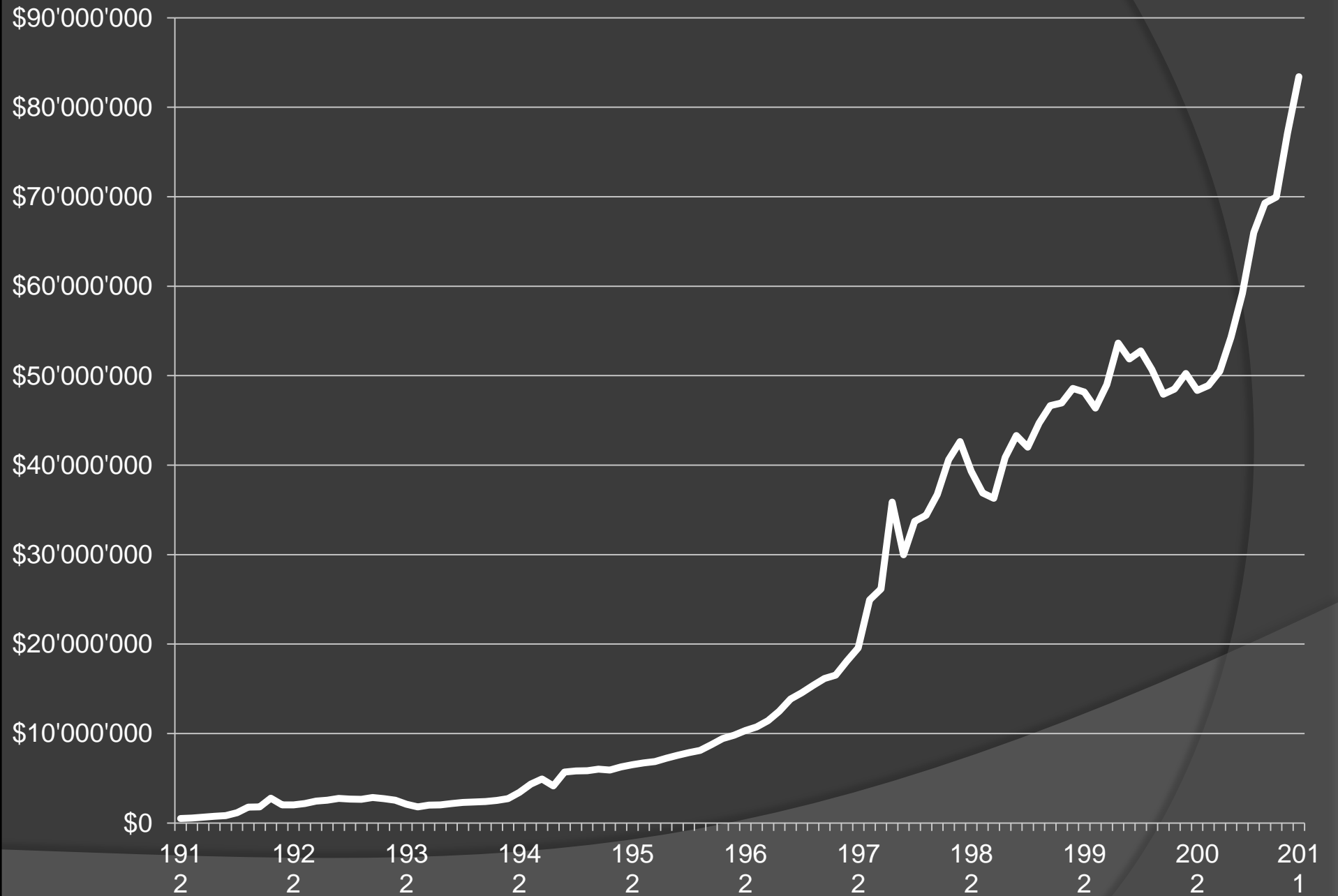


# Example of a comparison

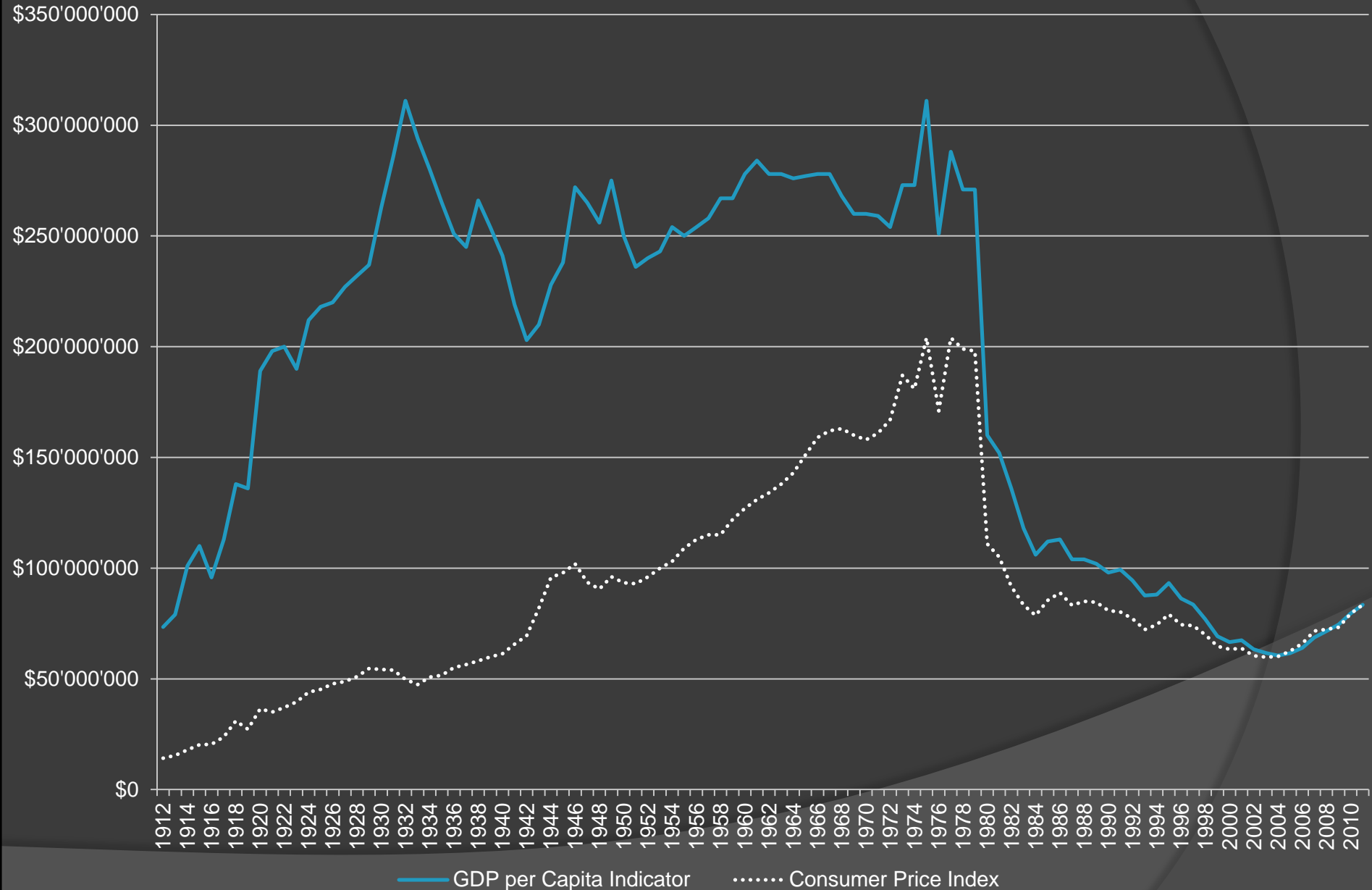
Accessions by year – selected divisions



# World Mission offerings, 1912–2011



# World Mission Offerings, 1912–2011, in 2011 dollars



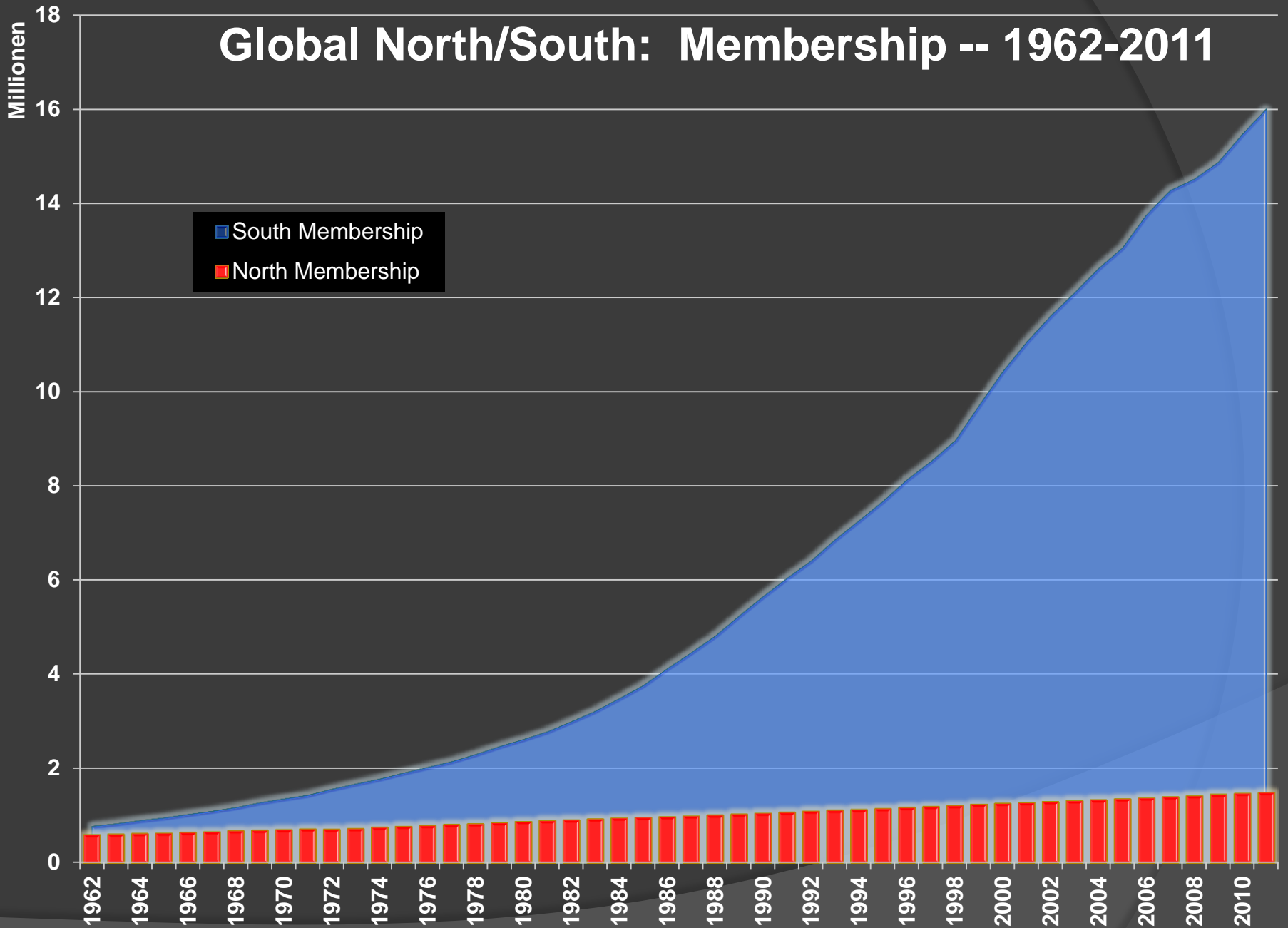
— GDP per Capita Indicator      ..... Consumer Price Index

# Look for different insights

- Global North/South
- 10/40 Window
- In EUD, you could compare different languages as well as different countries
- Wealthier (northern) countries compared to less wealthy (southern) countries—is there a difference in church statistics?
- Etc.!

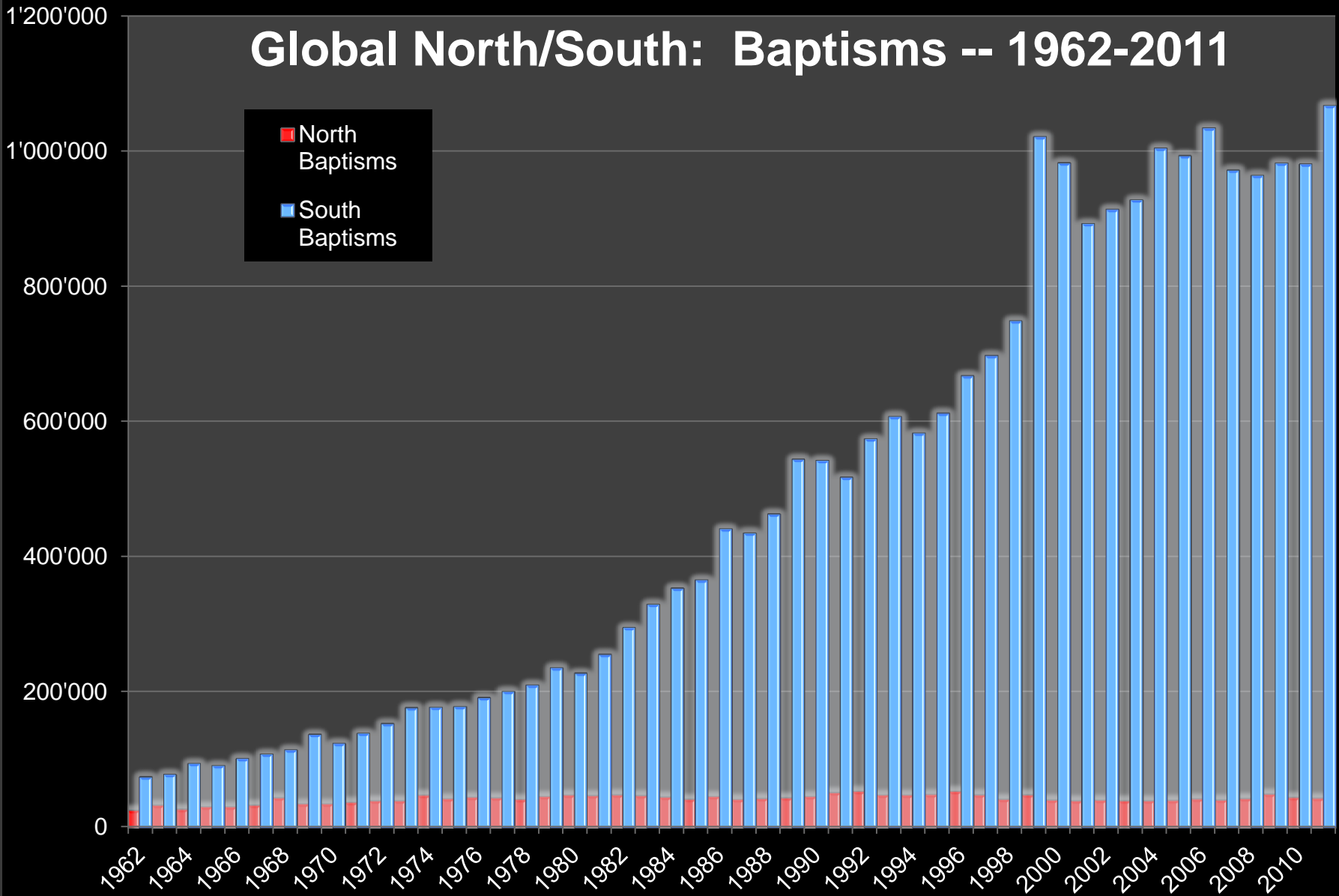


# Global North/South: Membership -- 1962-2011

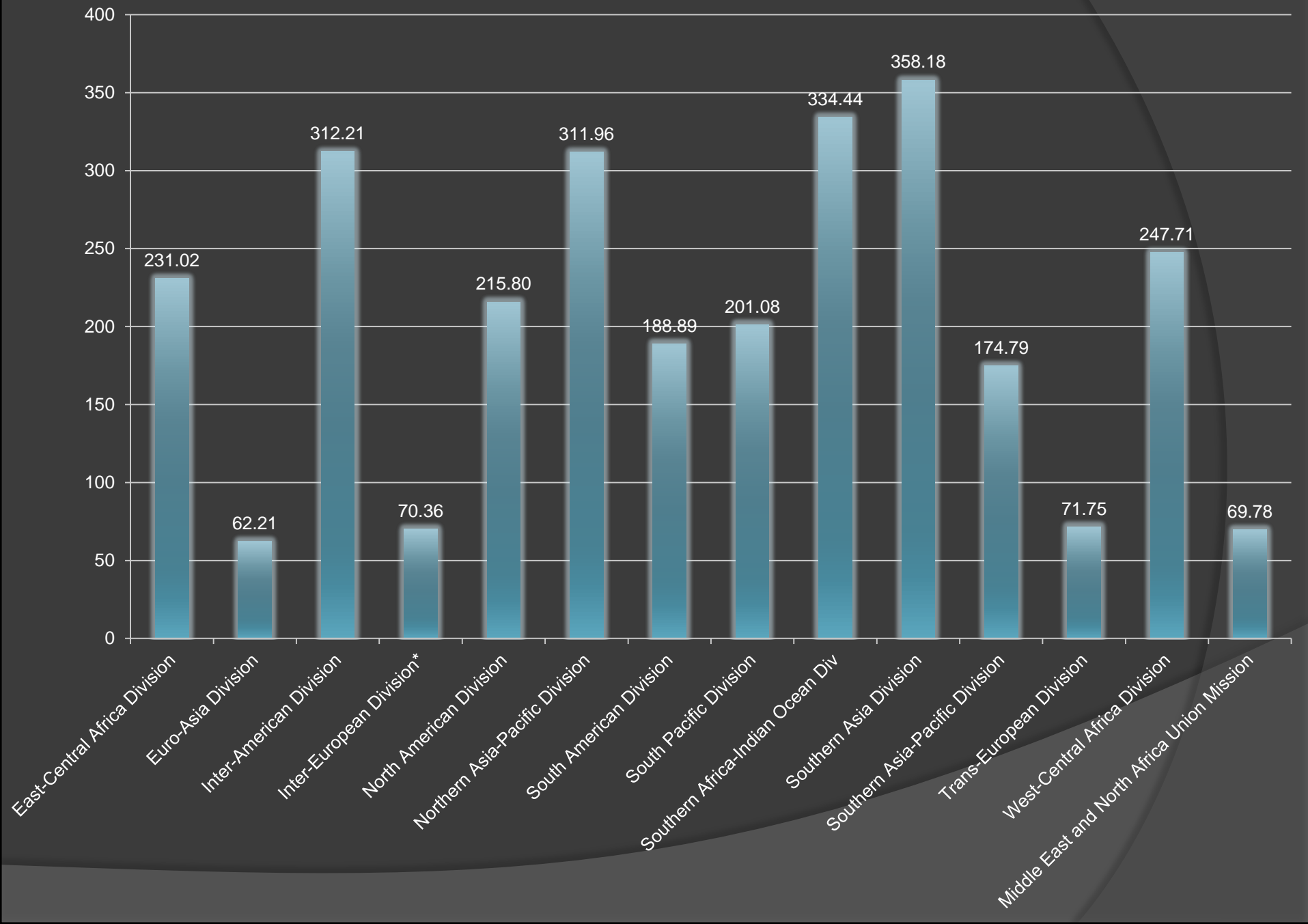


# Global North/South: Baptisms -- 1962-2011

■ North Baptisms  
■ South Baptisms

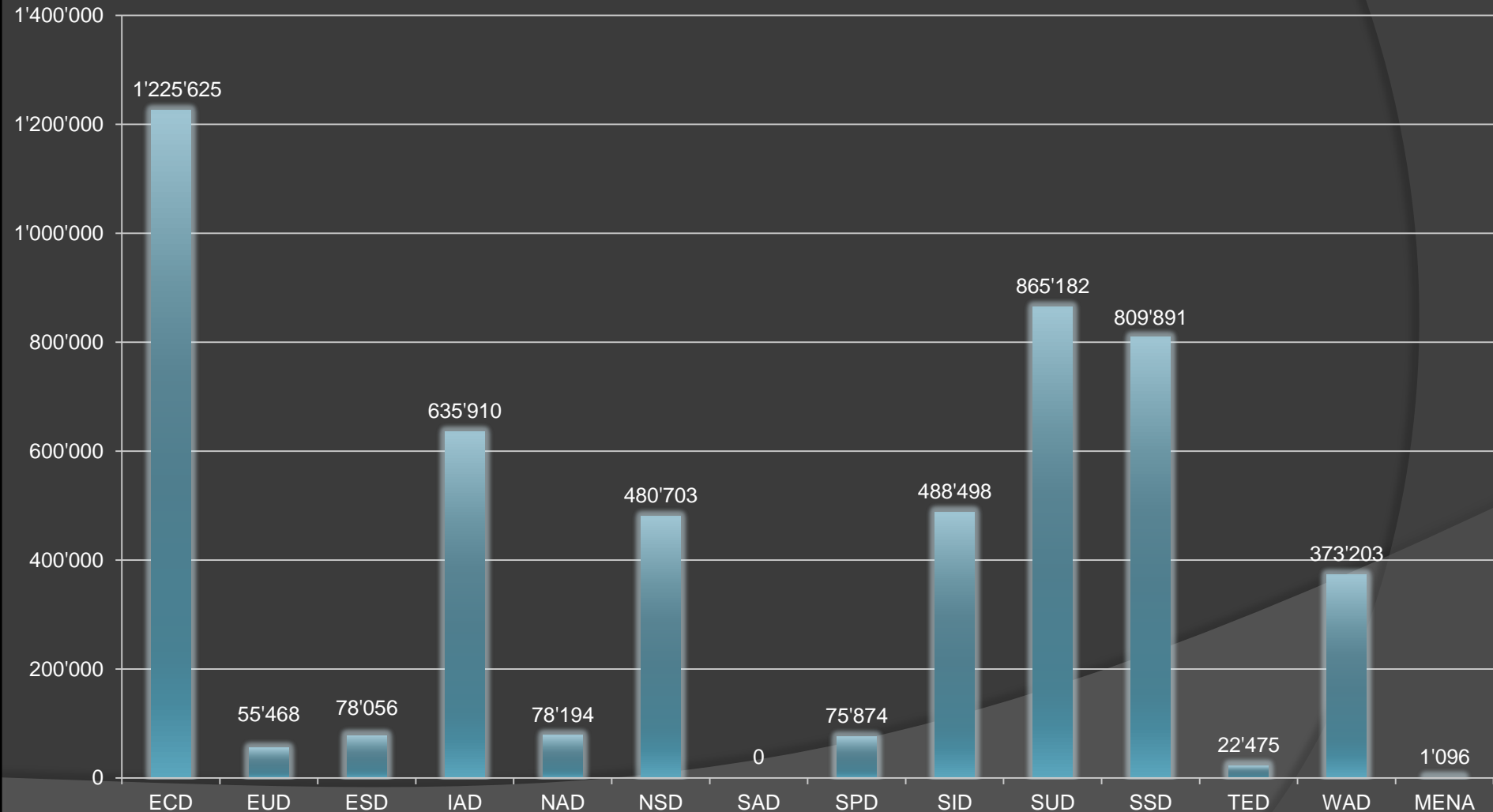


# Average Church size, by Division (and MENA), 2014



# A new metric: church attendance

## Church Attendance, by Division (and MENA), 2014



# What about surveys?

Surveys are a method of gathering information from individuals.

Surveys have a variety of purposes, and can be conducted in many ways.

Surveys may be conducted to gather information through a printed questionnaire, over the telephone, by mail, in person, or on the web.

# What about surveys?

Do we survey the entire population or just a sample?

Cost issues – can the entire population be surveyed without any bias?

Adequacy of sample – is the sample large enough to be reliable?

Representativeness of sample – does the sample adequately represent the population?

# What about surveys?

What is sampling error?

A statistical estimate of how well the results from a sample reflect the entire population – often expressed as plus/minus  $x\%$

How to know if the sample represents the population?

Goodness of fit test (often Chi-square statistic is used)



# Example of a goodness-of-fit test

|                        | AUC    | NZPUC  | PNGUM   | TPUM    | SPD Total   |
|------------------------|--------|--------|---------|---------|-------------|
| Members                | 59,112 | 19,202 | 240,205 | 110,617 | 429,136     |
| Percent of total       | 13.8%  | 4.5%   | 56.0%   | 25.8%   |             |
| Expected response rate | 296    | 96     | 1201    | 553     | 2146 (0.5%) |
| Surveys received       | 350    | 250    | 400     | 350     | 1,350       |
| Percent of total       | 25.9%  | 18.5%  | 29.6%   | 25.9%   |             |



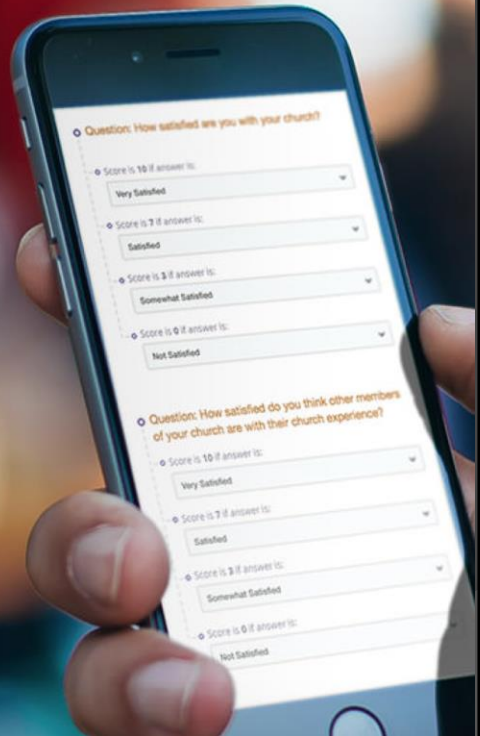
# Statistical terms commonly used in reporting survey results

- Average (mean or median)
- Correlation (simple and multiple)
  - Remember that correlation is not the same as causation!
- Significant relationship – probable that it did not happen by chance



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# Church Research At Your Fingertips

Adventist Research (www.adventistresearch.org)

# Statistics: Conclusion

- Statistics *are* difficult, but not impossibly difficult
- Excel makes it *easy* to generate charts
- But be imaginative in the way you look at statistics
- Let's not define ourselves by numbers: God in the Bible is on the side of the few, not the mighty