Cultural Perception of Seventh-day Adventist Fundamental Beliefs through Big Data Analysis

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The Digital Universe is Huge

- The digital universe is **doubling in size every two years**.
- By **2020** it will reach **44 zettabytes**, or **44 trillion gigabytes** [1].
- These facts have motivated **companies** and **scientists** in the last years to find new ways to understand **big data** in the digital universe.

1. EMC Corporation. (2014). The digital universe of opportunities: Rich data and the increasing value of the internet of things. URL: http://www.emc.com/leadership/digital-universe/2014iview/executive-summary.htm

Big Data

- **Big data** is a termed that can be used to describe data sets so **large** and **complex** that they become difficult to work with using standard techniques [2].

- **Big data is the next big thing**. **The new oil** [3].

2. Snijders, C., Matzat, U., and Reips, U.-D. (2012). “Big data”: Big gaps of knowledge in the field of Internet science. International Journal of Internet Science, 1(1):1–5.

3. Rotella, P. (2012). Is data the new oil? URL: http://www.forbes.com/sites/perryrotella/2012/04/02/is-data-the-new-oil/

My Way Towards Research on Big Data

2014 **2015** **2016** **2017**

Understanding Data with Computer Science

Software (IJSC, SERP 2014)
Health (IUPESM 2015)
Geoscience (ICAI 2015)
Smart Cities (ICAI 2015)

References to publications are available on www.harveyalferez.com

My Way Towards Research on Big Data

2014 **2015** **2016** **2017**

Understanding Data with Computer Science

Could big data analysis help the Seventh-day Adventist Church to understand itself and the world?

References to publications are available on www.harveyalferez.com

Use **big data analysis** to try to understand how **culture** perceives our **fundamental beliefs.**

Big Data and Our Church

- In this study, the computational data analysis was based on **culturomics**.

- The application of high-throughput data collection and analysis to the study of human culture [4].

4. Michel, J.-B. et al. (2011). Quantitative analysis of culture using millions of digitized books. Science, 331(6014):176–182.

Big Data and Our Church

- The full **data set** used in the experiments is available for download at:

  https://books.google.com/ngrams

  - This data set is composed of digitized texts containing about **4% of all books ever printed** between **1800** and **2008** (5,195,769 books).

  - **Books** in **English** (361 billion words) and in **Spanish** (45 billion words)

Big Data and Our Church

- The corpus **cannot be read by a human** [4]:
  - If you try to read only English-language entries from the year 2000 alone, at the reasonable pace of 200 words/min, without interruptions for food or sleep, it would take **80 years**.

4. Michel, J.-B. et al. (2011). Quantitative analysis of culture using millions of digitized books. Science, 331(6014):176–182.

Big Data and Our Church

- The **Google Ngram Viewer** was used to visualize the results.
    - A **1-gram** is a string of characters uninterrupted by a space. This includes words (“car”, “MICHIGAN”) but also numbers (“3.14”) and typos (“excesss”).
    - An **n-gram** is a sequence of 1-grams, such as the phrases “stock market” (a 2-gram) and “the United States of America” (a 5-gram) [4].

4. Michel, J.-B. et al. (2011). Quantitative analysis of culture using millions of digitized books. Science, 331(6014):176–182.

Church, Religion and Bible

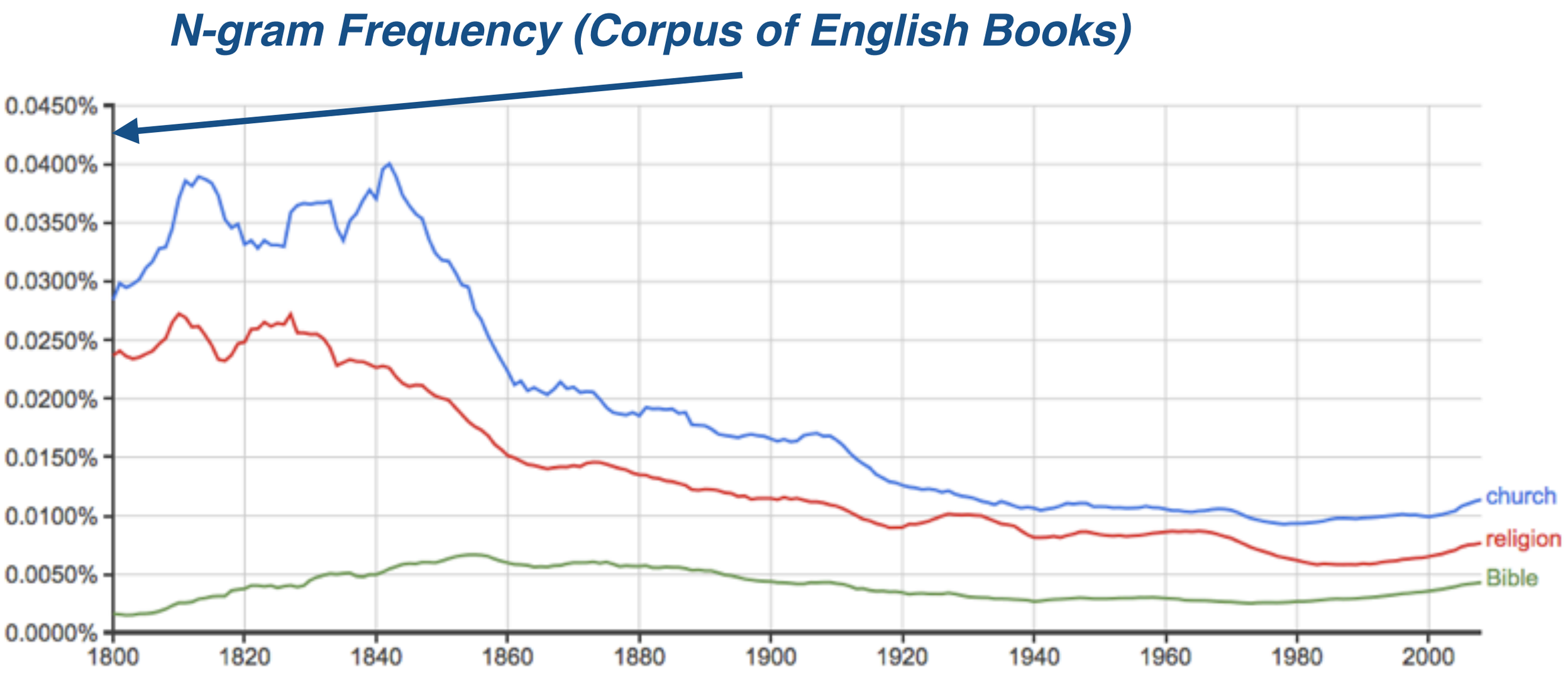

Figure 1. Church, Religion, and Bible Trends

Secularization

Figure 2. Secularization Trend

God

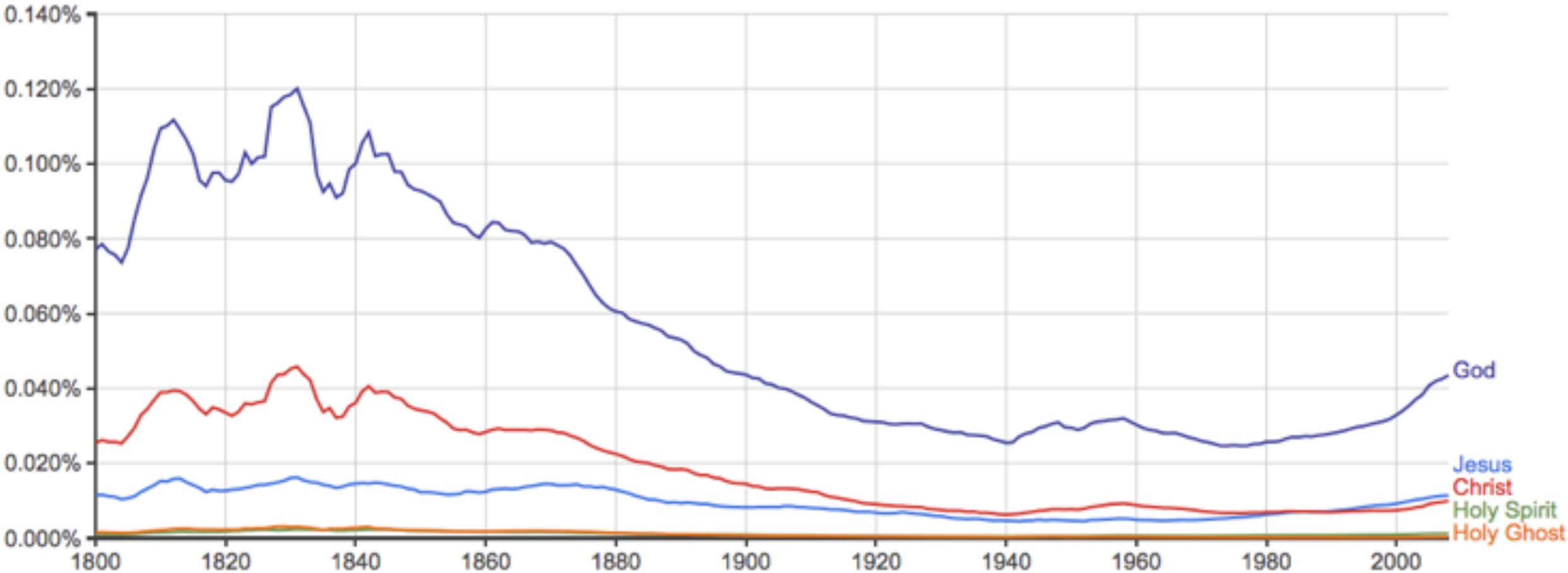

Figure 3. God-Related Trend

Creation

Figure 4. Creationism vs. Theory of Evolution (Case Insensitive Search)

The Sabbath

Figure 5. Sabbath Trend

Nature of Man

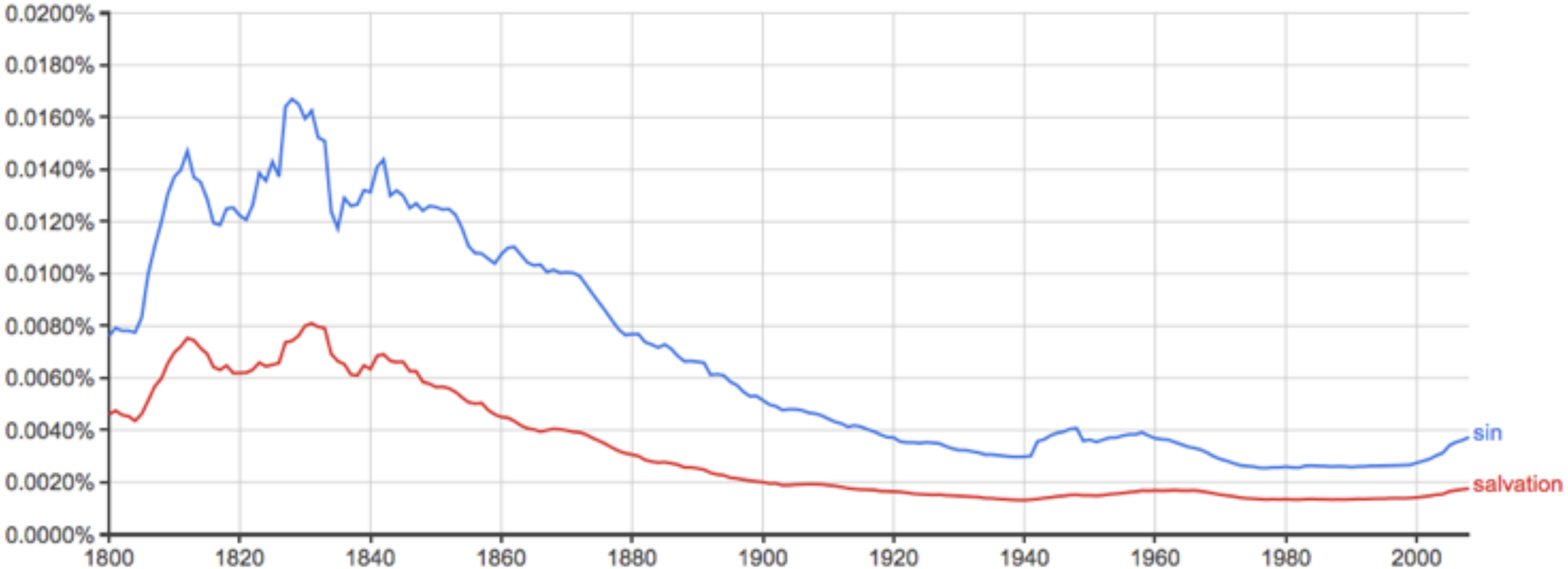

Figure 6. Sin and Salvation Trends

The Law of God and Justification by Faith

Figure 7. Ten Commandments and Justification by Faith Trends
(Case Insensitive Search)

The Second Coming of Christ

Figure 8. Second Coming of Christ, English Vs. Spanish Trends (Case Insensitive Search)

Healthy Living

Figure 9. Increasing Interest in Healthy Living and Vegetarianism

Conclusions

- Our **Church** can do something **valuable** with **big data**.
    - For instance, big data can help us to **make our beliefs relevant in a postmodern culture**.

- **Computational approaches** can be used to understand large pools of data, discover patterns, and make **“data-driven” decisions**.

Conclusions

"The analysis of **big data** is not only a matter of solving computational problems… For the analysis of big data to truly yield answers to society's [Church's] biggest problems, **we must recognize that it is as much about social science as it is about computer science**" [5].

- Justin Grimmer, Stanford University

5. Grimmer, J. (2015). We Are All Social Scientists Now: How Big Data, Machine Learning, and Causal Inference Work Together. Political Science & Politics. 48(01): 80-83.

Conclusions

- The applications of big data in the social sciences have not been well documented: **we know very little of how big data is actually being used in the social sciences** [6].

- **Emerging Field:** Computational Social Science.

  - Use large-scale demographic, behavioral and network data to investigate human activity and relationships [7].

6. University of Oxford. (2014). Accessing and Using Big Data to Advance Social Science Knowledge. URL: http://www.oii.ox.ac.uk/research/projects/?id=98

7. Microsoft Research (n.a.). Computational Social Science. URL: http://research.microsoft.com/en-us/projects/css/

Future Work

- **Projects:**
  - **AWR:** Analysis of large data logs on the cloud.
  - **Loma Linda University:** Analysis of large data sets of geochemical data.
  - 10/40 Window - How can we understand the needs and opportunities in the mission field?
- Create a research group on **Computational Social Science** in the Seventh-day Adventist Church.

FEATURED

13th Sabbath Offering Builds 2 Remote Clinics in South Pacific

The clinics are located in areas of Papua New Guinea with little or no Adventist presence.

DEPARTMENTS

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SCREENING ROOM

ENGAGE

Big Data for Reaching a Big World

High-tech refinements for mission outreach

BY GERMÁN H. ALFÉREZ

There is a new voice in the public square. A new voice in business boardrooms. A new voice from the world of research and technology. It is the voice of big data. And whether you have been listening or not, what big data has been saying points to a great breakthrough for mission-minded Christians.

Culturomics and the Digital Universe

Big data is a term that can be used to describe data sets so large and complex that they become difficult to work with using standard techniques.[1] The digital universe is huge, doubling in size every two years. By 2020 it will reach 44 zettabytes, or 44 trillion gigabytes.[2] This fact has motivated companies and scientists to find new ways to understand big data in the digital universe. Organizations can use big data to make more intelligent decisions. Big data is definitely the next big thing, so much so that people are saying big data is the new oil.[3]

Big data opens new opportunities for the Seventh-day Adventist Church. With the great amount of internal and external data, it is possible to look for hidden patterns that can help us understand ourselves.

Beyond that, this big data review gives us a better

http://www.adventistreview.org/1511-47

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