Carson Slater **All responses in blue, except the citation.**
STA 5380 Homework #1: Due in class on Thursday, September 7, 2023.

The StudyFinds link: https://studyfinds.org/digital-religion-millennials/

The appropriate citation:

Wilkins-Laflamme, S. (2022) "Digital Religion Among U.S. and Canadian Millennial Adults," *Review of Religious Research*, 64: 225–248. https://doi.org/10.1007/s13644-021-00463-0

- Research Hypothesis:

  1. What is the research objective? In other words, what is/are the question(s) for which the researchers are seeking a solution?

  The research objective was to investigate the question, "To what extent do digital technologies play a contemporary role to in-person religious and spiritual activities only, or do they also reach out to and provide important spaces for new segments of the population removed from more conventional forms of organized religion?" In essence these researchers were trying to investigate whether digitalized spiritual practices were associated population shifts in attitudes toward religion or the engagement thereof.

- Study Design:

  2. What is the target population? Is this the population that is sampled?

  The target population were Millennials, defined as anyone born between 1986 and 2005. The data was gathered by the University of Waterloo's 2019 Millennial Trends Survey. It appears the researchers took care to select a representative sample.

  3. How many individuals are sampled, and what variables are recorded for each individual in the sample?

  Of survey participants, all 2514 respondents were aged 18-35 years old, with 1,508 being American and 1,006 being Canadian. According to the article, age, gender, education and regional quotas were mandated in the random selection of survey participants, although specifics were not stated. Additionally, participants were recruited as registered members of https://leger360.com. Post-stratification weights were created for the variables of the country of birth, household income, and race/ethnicity. Tables in the article indicate that religious education as a child, social media engagement and religious engagement were also inquired of on the survey. Lastly, there is a possiblility that selection bias would contaminate their representative sample assumption. That all depends on how https://leger360.com assigns people to their study, but even then, who knows what reasons people are signing up to participate in this service.

  4. In an ideal world with no time, monetary, or privacy constraints, are there other variables that could have been recorded but were not that would have more strongly supported the researchers' hypothesis? If so, what could they have recorded?

  In the absence of resource scarcity and privacy protection, perhaps researchers could ask social platforms for personal browsing data on their platforms, in addition to internet browsing data on their personal devices. Likewise, geospatial data could be collected to analyze how often and how long people frequent religious centers or

buildings. There are other types of data they could measure, such as network data of their relationships to other religious people both in-person and online. These ideas are a few of many possible variables that can provide more information about the question at hand.

5. Could there be any nonsampling error present in the data? If so, how might they bias the study results?

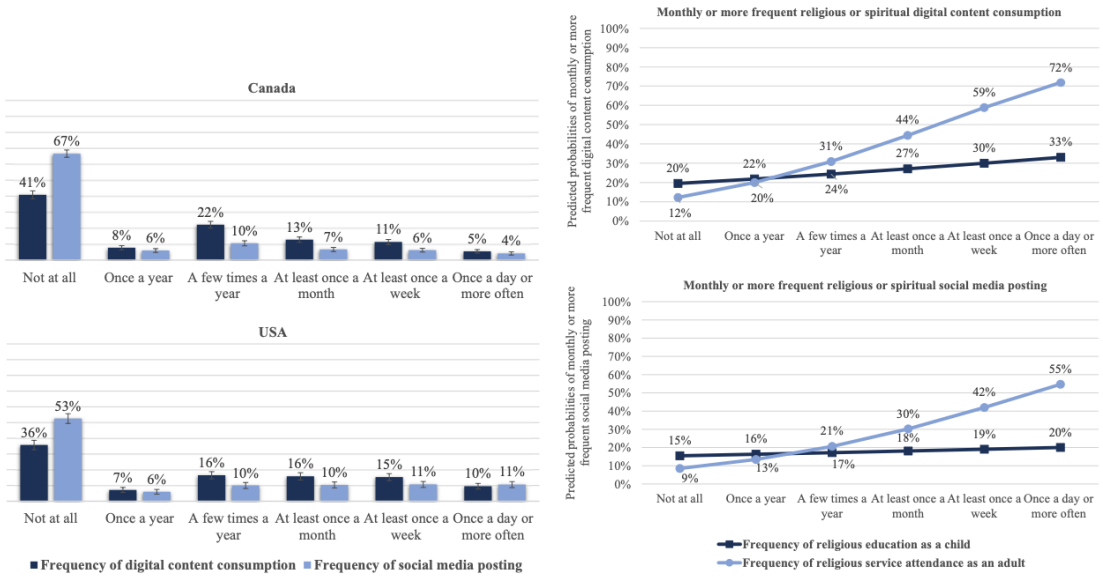
There is most likely nonsampling error present within this data, because much of it is qualitative survey data. These kinds of data are often impacted by measurement bias due to factors like dishonesty in the survey and incorrect recollection of events by participants. There is also likely measurement bias in quantitative variables for similar reasons. Poor wording of the survey (not fully given in the paper) could also confuse respondents, who would answer differently if they had understood the question.

These results might confound the regression analysis by adding attenuation bias, drawing the independent coefficients in the model closer to zero than the truth.

- Statistical Analysis:

6. Are any exploratory graphics or numerical summaries of the data presented?

Definitely. Figure 1 shows the table of coefficients from their regression analysis, whereas other visualizations for exploratory data analysis were also created, as shown in Figure 2a. Also, Figure 2b. shows an predicted probabilities plot for their models they created.



(a) (b)

Figure 2: Different exploratory plots with survey results.

7. Do the authors state or explore any assumptions of the statistical methods they chose to use?

They control "for socio-demographics to tease out specific associations between adult religious service attendance, adult unchurched spiritual activity, religious socialization

Table 3 Marginal effects on monthly or more frequent digital religious or spiritual content consumption, and on religious or spiritual social media posting, respondents 18–35 years old, U.S. and Canada, 2019

Model 1: Digital content consumption at least once a month; N = 2455; McFadden's R^2 = .294 Model 2: Social media posting at least once a month; N = 2448; McFadden's R^2 = .226	Model 1		Model 2	
	dydx	*SE*	*dydx*	*SE*
25–29 years old (ref. 18–24)	−.025	.021	.025	.020
30–35 years old (ref. 18–24)	−.042*	.021	−.012	.020
Male (ref. female)	.045**	.016	.037*	.016
Another gender (ref. female)	.109	.075	−.060	.098
University degree	.022	.019	.027	.018
Household income (8 categories)	−.007	.005	−.016***	.005
Working fulltime	.013	.018	.004	.017
At least one child	.036*	.018	.050**	.017
Reside in town/rural area with pop. < 50,000	−.038*	.019	−.018	.018
Reside in Canada	−.019	.018	−.078***	.017
Foreign born	.051	.029	−.042	.029
Born in country, but at least one parent foreign born	.011	.024	−.061*	.024
Indigenous (ref. White)	−.003	.035	.071*	.032
Black (ref. White)	.054	.029	.050	.027
Hispanic (ref. White)	.011	.030	.012	.029
Ethnic East Asian (ref. White)	.053	.038	.027	.038
Ethnic South Asian (ref. White)	.005	.038	.022	.038
Ethnic Southeast Asian (ref. White)	-.065	.040	.019	.039
Ethnic West Asian/Arab (ref. White)	.070	.055	.050	.052
Evangelical Protestant (ref. Catholic)	.089**	.032	−.035	.030
Mainline Protestant (ref. Catholic)	.010	.035	−.139***	.038
Black Protestant (ref. Catholic)	.039	.056	−.092	.050
Jewish (ref. Catholic)	−.011	.075	−.107	.086
Other religion (ref. Catholic)	.061*	.025	.012	.024
No religion – agnostic (ref. Catholic)	−.051	.033	−.063	.034
No religion – Atheist/Secular humanist (ref. Catholic)	−.064	.034	−.083*	.035
Spiritual with no religion (ref. Catholic)	.025	.032	-.036	.034
No religion – no particular preference (ref. Catholic)	−.100***	.029	−.053	.028
Growing up as a child between the ages of 5–12 years old, average frequency of receiving some form of religious or spiritual education at school, at home, or at a place of worship (6 categories)	.021***	.006	.009	.006
Frequency of religious service attendance (6 categories)	.084***	.005	.071***	.005
Unchurched spiritual activity at least once a month	.121***	.016	.071***	.016

Figure 1: Regression table *taken from the article.*

during childhood and the two outcome variables of monthly or more frequent religious or spiritual digital content consumption as well as social media posting." There appears to be many fixed effects that are included in the model as dummy variables. The outcome of course is a range from zero to one. The authors only consider statistically significant and 'relatively large' effects, which are labeled as having more than $\pm 5\%$ for marginal effects on the outcome.

8. Describe the statistical method(s) used to analyze the data. Does this method seem appropriate given the type of data that was collected?

Aside from calculation sample proportions and other descriptive statistics, the authors created two logistic regression models that model the probability that an individual has consumed or posted religious content on the internet respectively. Given the type of study and the type of data, this seemed fitting. Their outcome of interest is trying to find the probability of certains events happening, and to understand the associations for the sake of inference. A regression model is probably the most parsimonious option. For some variables, interaction terms were generated in separate models, but were ultimately statistically insignificant.

- Conclusions

9. Do the authors make appropriate conclusion statements based on their findings? In other words, do they overstate or understate the significance of their results? Do they ever make any "cause and effect" type of statements, and would such statements (if they are made) be legitimate for this type of study?

The researchers developed the following hypotheses at the beginning of the study:

- (H_1) that digital religion practices are prevalent among large segments of the Millennial population and are part of a wider turn towards individual spiritualization,
- (H_2) that digital religion practices are another set of religiosity indicators showing signs of a secular transition among Millennials,
- (H_3) or that both trends are occurring in tandem, in that some Millennials are practicing digital religion, mostly but not exclusively tied to in-person religious activities and socialization.

Within the conclusion, the researchers stated that their emperical work confirmed H_1, and H_3, but not H_2. The authors are very careful not to make any causal inferences; however, they elaborate on how religious upbringing is associated with higher proportions of people who post once a month about religious content. Some noteworthy conclusions discussed in the paper are that Evangelical Protestants are more likely to consume religious content on social media than both Catholics and mainline Protestants. Again, regarding secularization hypotheses, authors were hesitant to make any general, definitive claims.

10. Do you agree with the policy implications that the authors feel their research warrants?

Unfortunately, there were no policies that are prescribed in this paper.