

Religious Switchers: Data on Religious Change in New Zealand

Barry McDonald

Abstract The religious demography of Western societies is rapidly changing, especially as people who formerly said they belonged to a religion now say they have no religion. Using survey data from New Zealand, the relationship between religious affiliation, personal religiosity, and attendance at services was explored. It was found that choosing ‘No Religion’ as a label does not equate to having no religious beliefs. Panel data was used to examine how respondents change their religious affiliation. After three years 6% of formerly affiliated respondents answered ‘No Religion’, while 15% of formerly non-religious indicated a religion: However the first group was bigger, which meant a net decrease in affiliation overall. Demographic factors related to these changes were examined. A second survey quantified the extent of religious switching between churches in New Zealand.

1 Introduction

In many Western countries there has been considerable change in religious affiliation, in particular a rise in those not identifying with any religion ((Pew Research Center, 2015), (Skirbekk et al, 2010), (Kaufmann et al, 2012)). Simi-

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larly most Western countries have seen declining religious attendance (Brenner, 2016). Some of this change is through births and deaths, as young people who are themselves non-religious have children, and make up a bigger proportion of the population as the older, more religious generations die out (Schwadel, 2010). However some of the change is through switching, that is, people changing from one religion to another or to a non-religious status (Barro et al, 2010). Religion switching among Americans is a topic that has received considerable attention in the religious studies literature (e.g. (Sherkat, 2014), (Suh and Russell, 2015), (Lim et al, 2010), (Schwadel, 2010)) but less data is available on the phenomenon in other Western countries. The aim of this paper is to shed light on social and demographic factors related to religious switching in New Zealand (NZ). In the process the paper will publicise data from the NZ Census and surveys which have received little attention in the religious demography literature.

In 2012 there was a media flurry over a paper (Abrams et al, 2011) which suggested religion was heading for extinction in nine western countries including the Netherlands, Ireland, Australia, and NZ. This was based on a growing 'No Religion' response to religion questions in their national censuses. By contrast (Kaufmann, 2011) has argued that around the world 'No Religion' will eventually decline as a percentage, since non-religious are not reproducing as fast as religious persons, on average, and within religions the more conservative branches are reproducing fastest. This prognosis was recently confirmed in a comprehensive report (Pew Research Center, 2015) which applied a demographic model of religion, age, sex and fertility to almost every country of the world and indicated that 'No Religion', though continuing to grow for some time in countries like NZ, is expected to decrease at a global level. An interesting aspect of the Pew study is that, wherever possible in each country, they included information on the rates of religious switching in their calculations (albeit switching only between mega-groups such as to/from all Christian religions lumped together, all Buddhists lumped together, etc.).

New Zealand is an English-speaking developed country with strong cultural affinity to Australia, Canada, the USA, the UK and (to a lesser extent) other European countries. These countries have also been major sources of migrants to NZ. Thus findings from NZ should at least partly generalize to these other Western countries. Unlike the UK there has never been a state church in NZ, religion being regarded largely as a private matter. The five-yearly Census has contained a question on residents' religious adherence since 1851. In the 1921 Census over 99% of NZers at least nominally belonged to a Christian church,

Table 1 New Zealand Census Data 2001-2013. Numbers and Percentages of Adherents by Religion

Religious Group	2001 N	2006 N	2013 N	2001 %	2006 %	2013 %
Anglican	584793	554925	459771	17.6	15.3	12.0
Catholic	486012	508812	492324	14.7	14	12.9
Presbyterian	431547	401448	330903	13	11.1	8.7
Christian nfd	192165	186234	216177	5.8	5.1	5.7
Methodist	120705	122076	103047	3.6	3.4	2.7
Pentecostal	67239	79617	74433	2.0	2.2	1.9
Baptist	51426	56919	54345	1.6	1.6	1.4
Brethren	20406	12963	13677	0.6	0.4	0.4
Adventist	14868	16194	17085	0.4	0.4	0.4
Salvation Army	12618	11490	9162	0.4	0.3	0.2
Orthodox	9588	13257	13833	0.3	0.4	0.4
Lutheran	4314	4476	3903	0.1	0.1	0.1
Maori Christian	64926	67563	54180	2.0	1.9	1.4
Jehovah's Witness	17826	17910	17931	0.5	0.5	0.5
Latter-day Saints	39912	43536	40728	1.2	1.2	1.1
Other Christian	22215	26199	27387	0.7	0.7	0.7
Buddhist	41634	52392	58440	1.3	1.4	1.5
Hindu	39864	64560	90018	1.2	1.8	2.4
Islam/Muslim	23637	36153	46194	0.7	1.0	1.2
Judaism/Jewish	6636	6858	6867	0.2	0.2	0.2
Spiritualist	5853	7743	7776	0.2	0.2	0.2
New Age Religions	10248	11775	10203	0.3	0.3	0.3
Sikh	5196	9507	19191	0.2	0.3	0.5
Other Religions	13584	14970	15075	0.4	0.4	0.4
No Religion	1028052	1297104	1635348	31.0	35.8	42.8
Object to Answering	239244	242610	173034			

mostly Protestant, and close to 30% usually attended weekly services (Jackson, 1983). In common with other Western countries the postwar period has seen a major decline in religious affiliation.

Table 1 shows the religious breakdown of the approximately 4.5 million NZers in the last three Censuses, 2001, 2006 and 2013 (Statistics New Zealand, 2016). (The planned 2011 Census was delayed two years because of a major earthquake). The table shows substantial declines in the larger Protestant churches (Anglican, Presbyterian and Methodist), a rise in unaffiliated Christians (Christian nfd, i.e. not further defined) and a rise in 'No Religion'. By the next NZ census in 2018, the 'No religion' category may exceed 50% of total responses. The total numbers of Catholics have not declined as much as Protestants, and in 2013 Catholicism was for the first time the largest single religion in NZ. Table 1 also shows a decline in Maori Christian (Ratana and Ringatu)

churches and a rise in Eastern religions (Buddhism, Hinduism, Sikhism and Islam) while smaller Protestant denominations have been more or less stable. The percentages given in Table 1 are out of definite answers, excluding those who exercised their legal right to object to answering the question.

Declining religious affiliation has been noted in several developed countries but not all countries (e.g. (Pew Research Center, 2015), (Tomka, 2011), (Burkimsheer, 2014),(Kaufmann et al, 2012)). Immigration from countries with higher base rates of religious affiliation can alter the picture of decline. A cross-classification of the counts in Table 1 with birthplace (using the online table-builder function NZ.Stat at (Statistics New Zealand, 2016)) reveals that NZ-born Catholics declined by 9.6% between 2001-2013 while foreign-born Catholics increased by 41.6% between the same Censuses. The count of immigrants exceeded the decline in NZ-born, which explains the overall rise in Catholic numbers. NZ.Stat gives limited information about the source of Catholic migrants, but a survey of church attenders (CRANZ, 2016) shows NZ Catholic numbers have been bolstered by immigration from, especially, the Philippines, India, and Pacific Island nations. Census figures show immigration also explains 80% of the rise in Eastern religions (Hinduism, Islam, Buddhism and Sikhism) in this period. However an examination by age cohort (e.g. Fig. 3 of McDonald (2015)) suggests the change to 'No Religion' exceeds that explained by births, deaths and migration. It is therefore of interest to examine the extent of switching to or from the 'No Religion' category: insights gained may be relevant to other Western countries also.

Since Census data does not indicate individual changes, the rest of this paper relies on data from two surveys. Sections 2 and 3 introduce religion data from the NZ Election Study (NZES). Sections 4 and 5 focus on switching (or not) among respondents surveyed by the NZES more than once. Section 6 looks at changes in religious denomination for a survey of NZ church attenders. Section 7 gives some concluding remarks.

2 Introduction to the New Zealand Election Study

The NZES is a collaboration of political scientists who run a survey after each NZ election, usually every three years. The raw data from this survey is made available to other researchers for secondary analysis after 18 months and the NZES collaborators are gratefully acknowledged for making the data available

at www.nzes.org. The survey includes three questions on religion. In terms of political impact in New Zealand, religion seems to have little effect, and the questions have received little attention in published results of the NZES. However the questions are of interest to social researchers, especially as they are a source of religion data independent of denominations or religious bodies, collected by disinterested researchers, and the figures are not likely to be greatly affected by response bias as the questions were only incidental to the study. To the author's knowledge, this paper is the first published detailed analysis of these figures.

The NZES survey was a stratified random sample of individuals selected from the NZ Electoral Roll, on which, with few exceptions, all permanent residents over the age of 18 are compulsorily included. Survey forms were mailed to the individuals' residential addresses, with a response rate of around 40% in 2008 (for fresh contacts; there was a higher rate among a panel of individuals re-contacted from previous surveys). Survey strata reflect the fact that response rates are lower for the young and among the indigenous Maori population (the latter have the choice of being on a separate electoral roll) so these groups were oversampled. For analysis purposes the NZES provide survey weights based on: three age groups; Maori and non-Maori; males and females; three education levels; and whether or not the respondents voted in the election. More information about the study is available at www.nzes.org. The results in Tables 2 and 4 were obtained using the Survey function in R, and applying the weights provided by NZES.

The NZES religious affiliation data in Table 2 are consistent with Census data for 2006, to the extent that sampling error allows. Bootstrap 95% confidence intervals for the NZES2008 data included the Census percentages with the exception of Baptists, who were overestimated compared to the Census. The larger Census percentage for 'No Religion' in 2013 did not match NZES2011.

The NZES survey question on religion is similar to that in the Census. In both cases 'No Religion' is given as the first box that one could tick, which may bias upwards the chance that a respondent would choose it (the 'primacy effect' (Krosnick and Alwin, 1987)). Then a small list of Christian denominations was given that one could tick, namely Anglican, Catholic, Presbyterian, Methodist, Ratana (a Maori Christian religion) and an opportunity was given to just tick 'Christian' (in the NZES, tick 'Other Christian') or to write in a denomination. There is also a small list of non-Christian religions to tick: Buddhist, Hindu, Muslim, Jewish and Other (again with an opportunity to name the religion). There were minor differences between the Census and NZES

Table 2 New Zealand Election Study Surveys 2002-2011. Percents for Religious Adherence, Attendance and Personal Religiosity, with bootstrap standard errors

	2002		2005		2008		2011	
	%	SE	%	SE	%	SE	%	SE
Religious affiliation								
No Religion	24.5	0.9	31.6	1.1	31.8	1.3	34.8	1.2
Anglican	22.9	0.7	19	0.8	18.8	1.0	16.6	0.8
Presbyterian	17.3	0.7	15.5	0.8	12.8	0.8	12.4	0.8
Catholic	14.1	0.6	14.2	0.8	13.6	0.9	15.1	0.9
Methodist	4.1	0.4	3.7	0.4	3.5	0.4	2.5	0.4
Baptist	3.3	0.4	2.3	0.3	2.7	0.4	2.8	0.4
Indep/Fund./Pente. ^a	3.1	0.3	2.5	0.4	3.1	0.4	2.7	0.5
Maori Christian	1.4	0.2	1.7	0.2	1.9	0.4	1.2	0.2
Latter Day Saints	0.8	0.1	1.2	0.2	1.4	0.3	1.1	0.2
All Other Christian	5.3	0.4	5.2	0.5	6.8	0.7	7.0	0.7
Buddist	0.8	0.2	0.8	0.2	0.3	0.1	0.7	0.2
Hindu	0.4	0.1	1.3	0.3	0.6	0.2	0.6	0.2
Muslim	0.2	0.1	0.1	0.1	0.3	0.1	0.6	0.2
Spiritualism	0.7	0.1	0.2	0.1	0.4	0.1	0.5	0.1
Other Religions	1.2	0.2	0.8	0.2	2.0	0.4	1.4	0.3
Attendance at services								
At least weekly	12.8	0.6	11.7	0.7	11.8	0.8	10.5	0.7
2-3 per month	4.6	0.4	3.7	0.4	5.2	0.6	4.5	0.5
Once a month	2.4	0.3	3.2	0.5	2.0	0.3	1.6	0.3
2-11 per year	10.4	0.5	12.5	0.7	10.6	0.8	9.7	0.7
Once a year	12.5	0.6	12.3	0.7	14.2	0.9	12.8	0.8
Never	57.2	0.9	56.5	1.1	56.2	1.3	60.8	1.2
Personal religiosity								
Are very religious	11.7	0.6			11.8	0.9	10.9	0.7
Somewhat religious	31.7	0.8			30.9	1.2	27.2	1.1
Just not very religious	34.2	0.9			35.1	1.3	36.7	1.2
No religious beliefs	22.3	0.8			22.2	1.1	25.1	1.2
Sample size	4537		3743		3043		3102	
Panel from preceding survey	n.a.		1787		1547		1337	

^a NZES category 'Independent-Fundamentalist-Pentecostal Church'

questions. In the Census one could tick Ringatu, a small Maori Christian religion. The NZES instead gave tick-boxes for Baptists (which may explain why they are overestimated relative to the Census), Latter Day Saints (Mormons), and 'Independent-Fundamentalist-Pentecostal church', and instead of 'Other Religion' calls it 'Non-Christian' but then invites people to name the religion. In summary, the NZES question on affiliation matches the Census well in terms of 'No Religion' and the major denominations. Considered as a supplement

to the Census data, the NZES brings two distinct advantages: it has additional information on religious attendance, personal religiosity, and other characteristics of the individuals, and there is also panel data which enables one to look for three-year changes in affiliation, attendance and religiosity.

Table 2 further shows that around 11% of NZers attend religious services at least weekly, around 17% at least monthly; these figures have declined in concert with the decline in affiliation. The question on personal religiosity ('How religious are you?') was not asked in 2005. The numbers stating they were very or somewhat religious have declined while 'No religious beliefs' has increased. It is worth noting that the number claiming 'No religious beliefs' was 25% in 2011, which is well short of the nearly 35% who ticked the box for 'No Religion'. Clearly these are not the same concept.

3 Personal Religiosity and Attendance by Religious Affiliation

Table 3 shows how NZES respondents answered the question: 'Would you say: You have no religious beliefs; Or are just not very religious; Or are you somewhat religious; Or are very religious?' A further 'Don't know' category has been ignored for this table. The religions (rows) are ordered by weighted mean category of response, where higher scores generally mean more people in the 'Very religious' category. The groups who are most willing to call themselves very religious are in small evangelical or pentecostal churches such as Brethren or Assembly of God. The largest Protestant denominations (Anglican, Presbyterian and Methodist) have under 10% of adherents who regard themselves as 'Very religious'. These denominations are sometimes referred to as Mainstream or 'broad church' because they accommodate people with a wide variety of theological beliefs.

Table 4 shows how NZES respondents answered the question: 'Apart from weddings, funerals and baptisms, about how often do you attend religious services these days? Please tick one box.' with options: 'Never; Once a year; 2-11 times a year; once a month; 2-3 times a month; At least once a week.' For brevity some categories have been combined in this table. Religions (rows) in Table 4 are ordered according to weighted mean attendance per year. Less than 6% of Anglicans and Presbyterians attend weekly; over 57% never attend.

An interesting fact from Tables 3 and 4 is that 'Other Christian nfd' have a rate of attendance and levels of personal religiosity comparable to Baptists, Sev-

Table 3 Personal Religiosity by Religious Affiliation, NZES 2008 and 2011

	Very religious (3)	Somewhat religious (2)	Just not very religious (1)	No religious beliefs (0)	weighted mean ^a
Open Brethren	81.6	14.4	4.0	0.0	2.78
Pentecostal named ^b	67.6	27.0	1.1	4.3	2.58
Indep/Pente/Fund nfd ^c	66.2	28.4	3.1	2.3	2.58
Oth.Evangelical named	39.7	55.9	1.8	2.6	2.33
Hindu	39.3	52.6	8.0	0.0	2.31
Other Christian named	36.4	54.3	7.8	1.5	2.26
Baptist	40.2	47.3	9.4	3.1	2.25
Latter Day Saints	46.3	30.4	21.1	2.1	2.21
Seventh Day Adventist	28.5	55.8	15.8	0.0	2.13
Salvation Army	33.8	38.3	27.9	0.0	2.06
Other Christian nfd	30.4	45.7	22.9	1.1	2.05
Maori Christian	29.3	46.6	18.4	5.6	2.00
Muslim	24.5	49.9	25.7	0.0	1.99
Buddhist	18.3	51.7	30.0	0.0	1.88
Lutheran	26.8	39.9	14.2	19.1	1.74
Catholic	13.7	47.5	35.4	3.4	1.71
Other Religion named	22.4	38.3	13.4	25.9	1.57
Methodist	9.7	37.4	47.1	5.9	1.51
Pagan/Spiritualist	17.1	33.8	20.3	28.8	1.39
Presbyterian	6.5	32.5	52.9	8.0	1.38
Judaism	0.0	39.7	56.2	4.1	1.36
Anglican	5.5	34.9	49.1	10.5	1.35
Non Christian nfd	10.4	18.2	31.3	40.1	0.99
No Religion	0.7	8.6	33.7	57.1	0.53

^a Weighted mean is average religiosity category assuming weights of 3 for 'Very religious', 2 for 'Somewhat religious', 1 for 'Just not very religious' and 0 for 'No religious beliefs'.

^b named means a particular denomination or religion was specified.

^c nfd means not further defined.

enth Day Adventists or Salvation Army. This is noteworthy because 'Christian nfd' is the fourth-largest religious grouping in the NZ Census, rating at 5.7% of the population. It is tempting to think of this 'Christian nfd' category - because it is vague - as being the next step to dissociating from religion altogether, but the NZES data suggest this is not always the case. They may be very religious but simply unwilling to state a unique affiliation, perhaps because they attend a variety of churches.

Table 4 Attendance at religious services by religious affiliation, Combined NZES 2008 and 2011 data

	At least weekly	1-3 times per month	1-11 times per year	Never	Weighted mean ^a
Pentecostal named	81.5	10.9	7.7	0.0	44.5
Brethren	80.4	0.0	12.0	7.6	42.2
Indep/Pente/Fundam	64.5	21.2	8.0	6.2	37.6
Other Evangelical	44.4	16.8	26.4	12.4	26.9
Latter Day Saints	40.0	13.5	22.4	24.1	23.9
Baptist	33.1	29.0	16.3	21.6	22.9
Seventh Day Adventist	36.2	12.1	17.8	33.9	21.6
Christian not specific	33.7	18.7	19.7	27.9	21.5
Salvation Army	29.9	20.0	27.6	22.6	19.9
Muslim	25.6	31.3	30.0	13.2	19.8
Hindu	17.2	29.4	39.2	14.3	15.4
Other Christian named	21.5	16.6	16.8	45.0	14.7
Catholic	17.7	14.8	29.5	38.0	12.8
Other Religion	8.4	37.2	34.6	19.8	12.1
Lutheran	15.9	20.1	4.0	60.0	12.0
Maori Christian	6.9	26.7	35.7	30.7	9.4
Methodist	11.9	9.3	25.6	53.2	8.6
Buddhist	4.5	10.5	59.2	25.7	6.0
Anglican	5.9	10.6	25.9	57.6	5.8
Presbyterian	5.5	11.5	24.3	58.8	5.6
Non Christian not spec	3.5	10.0	6.0	80.4	3.8
Pagan/Spiritualism	0.0	14.4	10.7	74.9	2.9
Judaism	0.0	0.0	42.7	57.3	1.3
No Religion	0.2	1.4	9.7	88.7	0.7

^a Weighted mean is average annual attendance assuming weights of 1 for 'At last weekly', 18/52 for '1-3 times per month', 3/52 for '1-11 times per year' and 0 for 'Never'.

4 Change in Religious Affiliation in Three Years

We now consider whether NZES respondents changed the way they answered the religious affiliation question from one survey to the next. A selection (panel) of NZES respondents in 2002 were surveyed again in 2005, another panel from 2005 surveyed again in 2008, and a third panel in 2008 surveyed again in 2011. Each panel included some respondents from the preceding panel, and some new respondents; no respondents were included in all four surveys. Table 5 shows the three-year changes in religious affiliation, combined, for the sake of simplicity, across all three panels 2002-5, 2005-8 and 2008-11. Unfortunately, because the data are combined, some individuals are included more than once in Table 5; the denominator for percentages is three-year periods, not individuals. Similarly since responses by individuals in different periods are not

independent, this means that the P-values in Sect. 5 must be taken with a grain of salt.

For brevity the religions in Table 5 have been grouped in a way that best reflects their pattern of religious change. No Religion here refers to anyone specifying No Religion or Atheist, Humanist, etc. Mainstream refers to Anglicans, Presbyterians or Methodists. Baptists are the largest other Protestant denomination. 'Christian nfd' (not further defined) refers to people who ticked a box for other Christian, but did not give a specific denomination - although they may have given some other indication of 'flavour' such as Protestant or Evangelical. Distinctive refers to churches or Christian-origin groups which have considerable theological or cultural barriers to people changing to/from a different denomination: Seventh-Day Adventists, Greek and Russian Orthodox, Maori-based churches (Ratana, Ringatu, Pai Marire), Christian Science, Jehovah's Witnesses and Latter Day Saints. Small Protestant refers to all other Christian churches actually named by respondents, including Pentecostal ones. 'Spirit'st/NonChr.nfd' refers to Spiritualists, pagans and new-age followers, and also those who simply ticked a box for Non-Christian without specifying a religion: these two groups had a similar pattern of transition. Other Religion refers to all other religions named: Buddhist, Hindu, Muslim, Bahai, Judaism, Taoism etc.

Table 5 reveals that 85.4% of those ticking the 'No Religion' box ticked it again three years later. Conversely 14.6% of panelists who ticked 'No Religion' for one survey chose a different identification three years later, including 9.5% Mainstream churches and 1.6% Catholics. More detailed analysis show these were 4.1% Anglican, 4.3% Presbyterian, and 1.0% Methodist, while 1.0% ticked a box for NonChristian without further specifics. Of those starting as Mainstream, detailed examination shows: 90.6% of Anglicans stayed Anglican, 5.3% changed to 'No Religion' and 1.7% to Presbyterian; 87.6% of Presbyterians stayed Presbyterian, 5.1% changed to 'No Religion' and 3.9% to Anglican; and 82.0% of Methodists stayed Methodist, with 7.9% changing to 'No Religion', 3.1% changing to Anglican and 4.2% to Presbyterian. Of Catholics, 93.6% again ticked Catholic three years later, but 4.4% changed to 'No Religion'. Only 74.5% of Baptists remained Baptist three years later.

Table 5 New Zealand Election Study Surveys 2002-2011 Three-Year Change in Religious Grouping

At Start N	After Three Years								
	No Religion	Main- stream	Catholic	Baptist	Small Protestant	Christ. nfd.	Disti- nctive	Spirit'st/ NonChr.	Other Religion
No Religion	821	91	15	2	4	5	6	11	6
Mainstream	108	1808	5	6	9	12	5	6	1
Catholic	27	6	573	1	1	2	0	1	1
Baptist	7	8	0	70	3	5	0	1	0
Small Protestant	7	12	0	4	68	40	9	0	0
Christian nfd	10	16	2	5	20	86	2	2	1
Distinctive	8	6	0	0	3	1	207	0	1
Spirit'st/NonChr.nfd ^a	14	7	4	0	0	0	0	13	4
Other Religion	10	2	0	2	0	2	1	5	53
Row %									
No Religion	85.4	9.5	1.6	0.2	0.4	0.5	0.6	1.1	0.6
Mainstream	5.5	92.2	0.3	0.3	0.5	0.6	0.3	0.3	0.1
Catholic	4.4	1.0	93.6	0.2	0.2	0.3	0.0	0.2	0.2
Baptist	7.4	8.5	0.0	74.5	3.2	5.3	0.0	1.1	0.0
Small Protestant	5.0	8.6	0.0	2.9	48.6	28.6	6.4	0.0	0.0
Christian nfd	6.9	11.1	1.4	3.5	13.9	59.7	1.4	1.4	0.7
Distinctive	3.5	2.7	0.0	0.0	1.3	0.4	91.6	0.0	0.4
Spirit'st/NonChr.nfd	33.3	16.7	9.5	0.0	0.0	0.0	0.0	31.0	9.5
Other Religion	13.3	2.7	0.0	2.7	0.0	2.7	1.3	6.7	70.7

^a Spiritualist/Pagan or NonChristian not further defined

5 Factors Associated with Abandonment or Adoption of Religion

Tables 6 and 7 examine variables that are related to whether panelists switched to or from the 'No Religion' category within the three year period. The second and third columns of Tables 6 and 7 are labelled 'Abandon Religion', and refer to responses where any religious designation other than 'No Religion' was given at the start of the period. 'Yes' means they changed to 'No Religion' (5.8% of responses) and 'No' means they still affiliated to a religion at the end (but not necessarily the same one). 'Yes' was more common among: Males; younger age groups; people who had started university studies but not completed them; divorced or separated people or singles who had never been married; people who never attend religious services anyway despite giving a religious affiliation; people who designated themselves as having no religious beliefs or just not very religious despite giving a religious affiliation; people who designated themselves as spiritualist or pagan or as non-Christian with-

out stating anything specific; or people of other religions (changers in this last group were predominantly Asian Buddhists). The first p-value for each factor is the simple chi-square test for independence between abandoning a religious label and each factor one-at-a-time. The second p-value (designated *mv.P*) is the p-value for a binary logistic multiple regression with all variables included except Religiosity. Religiosity could not be included in the model because it gave rise to quasi-complete separation, i.e. responses for at least one category combination were totally 'Yes' or 'No'. Age (actual age in years) was used in the regression instead of agegroup. All the predictor variables remained significant except ethnicity. The multiple regression had a Deviance $R^2 = 23.1\%$ and the Hosmer-Lemeshow goodness of fit test indicated an acceptable model ($P=0.218$).

The last two columns of Tables 6 and 7 ('Adopt Religion') refer to responses which were 'No Religion' at the beginning of the three-year period. There were fewer of these than in the preceding columns. Some 14.6% of the responses changed to nominating a religious affiliation (1% changed to non-Christian not specified, and 13.6% to some other affiliation). There was a higher rate of adoption of a religious affiliation among: respondents aged over 60; widowed respondents; New Zealand Maori; and among respondents who were already religious attenders or previously regarded themselves as somewhat or very religious. There was a higher rate of adoption of religious affiliation among people with only primary (elementary) school education but in New Zealand most such people would be elderly, so this factor went from being marginally significant in the simple chi-square test ($P=0.052$) to being definitely insignificant ($P=0.284$) in the binary logistic multiple regression. The number of Pacific Islanders was too small for a chi-square test of Ethnicity with Adoption. The multiple regression had a Deviance $R^2 = 10.3\%$ and Hosmer-Lemeshow goodness of fit p-value=0.602 indicated an acceptable model. Those who adopted religious affiliation mostly designated themselves Presbyterian (29.3%), Anglican (28.6%), Catholic (10.7%) or Methodist (7.1%).

6 Change in Religious Attendance for a Survey of Church-goers

The NZES counts are too small to investigate changes from one religion (or Christian denomination) to another. Some insight may be gained from Table 8 which concerns attendees at certain church congregations that participated in

Table 6 Demographic factors associated with switching to/from 'No Religion'

Predictor	Abandon Religion		Adopt Religion	
	Yes N (%)	No N (%)	Yes N (%)	No N (%)
Sex				
male	106 (7.4)	1336 (92.6)	64 (14.1)	389 (85.9)
female	85 (4.6)	1765 (95.4)	76 (15.0)	432 (85.0)
<i>P-value</i>	<i>P=0.001^a</i>	<i>mv.P =0.001^b</i>	<i>P=0.715</i>	<i>mv.P=0.701</i>
Age Group				
18-29	26 (15.4)	143 (84.6)	10 (8.3)	111 (91.7)
30-39	34 (9.1)	338 (90.9)	22 (11.6)	168 (88.4)
40-49	41 (7.0)	543 (93.0)	27 (12.9)	182 (87.1)
50-59	35 (4.7)	714 (95.3)	33 (13.8)	206 (86.2)
60-69	41 (5.5)	709 (94.5)	34 (26.4)	95 (73.6)
70+	14 (2.1)	649 (97.9)	14 (19.4)	58 (80.6)
<i>P-value</i>	<i>P<0.001</i>	<i>mv.P<0.001</i>	<i>P=0.001</i>	<i>mv.P =0.001</i>
Education				
Primary School	12 (5.9)	190 (94.1)	11 (23.9)	35 (76.1)
High School	70 (4.5)	1480 (95.5)	52 (16.4)	265 (83.6)
Non-degree	39 (5.8)	638 (94.2)	34 (15.3)	188 (84.7)
Incomp.Univ.	27 (11.3)	212 (88.7)	12 (16.2)	62 (83.8)
Degree	43 (6.9)	579 (93.1)	30 (10.0)	270 (90.0)
<i>P-value</i>	<i>P<0.001</i>	<i>mv.P=0.005</i>	<i>P=0.052</i>	<i>mv.P=0.284</i>
Marital Status				
Married	109 (4.9)	2108 (95.1)	75 (12.5)	523 (87.5)
Widowed	7 (2.0)	351 (98.0)	12 (32.4)	25 (67.6)
Divorced	35 (10.1)	310 (89.9)	22 (16.9)	108 (83.1)
Single	40 (10.7)	333 (89.3)	31 (15.9)	164 (84.1)
<i>P-value</i>	<i>P<0.001</i>	<i>mv.P =0.004</i>	<i>P=0.006</i>	<i>mv.P=0.115</i>
Ethnicity				
European/other	141 (5.8)	2273 (94.2)	98 (12.5)	688 (87.5)
Maori	41 (5.5)	46 (94.5)	34 (24.3)	106 (75.7)
Pacific Island	1 (2.1)	46 (97.9)	2 (40.0)	3 (60.0)
Asian	6 (9.0)	61 (91.0)	3 (14.3)	18 (85.7)
<i>P-value</i>	<i>P<0.473</i>	<i>mv.P =0.682</i>	<i>c</i>	<i>mv.P =0.006</i>

^a P-value from chi-squared test for independence

^b *mv.P* is P-value from binary logistic multiple regression model

^c counts too small for chi-squared test.

the New Zealand Church Life Survey in 2007 or 2011 (CRANZ, 2016) . There were 26886 respondents who completed surveys at religious services for the seven denominations reported here. Table 8 shows, for these denominations, the percentage of attendees who had previously regularly attended various types of religious meetings. Around 10% of respondents had never attended any other congregation. Very few had previously attended gatherings for a non-Christian

Table 7 Religious factors associated with switching to/from 'No Religion'

Predictor	Abandon Religion		Adopt Religion	
	Yes N (%)	No N (%)	Yes N (%)	No N (%)
Attendance				
Never	136 (10.1)	1211 (89.9)	113 (13.3)	748 (86.7)
< once month	48 (4.7)	967 (95.3)	19 (22.6)	65 (77.4)
Mnthly-weekly	7 (0.8)	96 (99.2)	4 (57.1)	3 (42.9)
<i>P-value</i>	<i>P < 0.001</i>	<i>mv.P < 0.001</i>	<i>P < 0.001</i>	<i>mv.P = 0.003</i>
Religiosity				
No relig. belief	25 (20.5)	97 (79.5)	35 (9.5)	334 (90.5)
Just not v. relig.	71 (9.1)	710 (90.9)	27 (15.4)	148 (84.6)
Somewhat relig.	30 (2.3)	842 (97.7)	} 15 (29.4)	} 36 (70.6)
V. Religious	4 (1.2)	322 (98.8)		
<i>P-value</i>	<i>P < 0.001</i>	^a	<i>P < 0.001</i>	^a
Religious Affiliation				
Mainstream	108 (5.5)	1852 (94.5)		
Catholic	27 (4.4)	585 (95.6)		
Baptist	7 (7.5)	87 (92.6)		
Oth.Sml.Prot.	7 (5.0)	133 (95.0)		
Distinctive	8 (3.5)	218 (96.5)		
Christian nfd	10 (6.9)	134 (93.1)		
Spirit'st/NonChr. nfd ^b	14 (33.3)	28 (66.7)		
Other Religion	10 (13.3)	65 (86.7)		
<i>P-value</i>	<i>P < 0.001</i>	<i>mv.P < 0.001</i>		

^a not included in logistic multiple regression due to quasi-complete separation.

^b Spiritualist/Pagan or NonChristian not further defined

religion. Over 80% of Catholics, and over 50% of Anglicans, Presbyterians and Methodists had transferred from a different congregation of the same denomination. Conversely 8% of Catholics, 37% of Anglicans, 38% of Presbyterians and 38% of Methodists had previously been attending a different denomination (not necessarily all the time, but at least some of the time: individuals who previously regularly attended two denominations are weighted 0.5 each in this average, etc.) For Baptists, 51.5% of their church attenders had previously been attending a different denomination, including 14.2% from Pentecostal churches (in NZ, many Baptist churches are at least partially charismatic). Wesleyan Methodists, an evangelical church that split about 20 years ago from more liberal Methodists, had 34% of their congregation drawn from Methodism and 43% from other denominations. Union or Cooperating churches are joint gatherings of Anglicans, Presbyterians and/or Methodists, which is why most of their attendees previously attended one of those churches.

Table 8 Previous religious attendance of church-goers (percent) from NZ Church Life Survey 2007 and 2011

Column % Previous Church	Congregation attended when surveyed						
	Catholic	Anglican	Presbyterian	Baptist	Union/Coop. ^a	Methodist	Wesleyan Methodist
No Previous Church	11.1	10.7	11.0	11.4	10.2	10.2	9.0
Other Religious Gathering	0.3	0.4	0.3	0.4	0.2	0	1.6
Catholic	80.6	1.9	1.4	2.1	1.4	0.9	0.5
Anglican	1.7	52.2	6.5	6.6	11.7	6.1	6.0
Presbyterian	1.4	8.1	50.0	9.0	36.6	8.4	5.2
Baptist	0.6	6.4	8.0	36.7	4.8	4.1	4.9
Union/Cooperating	0	2.4	2.6	1.0	7.8	4.8	2.0
Methodist	1.1	3.5	4.1	2.7	16.2	51.9	34.4
Wesleyan Methodist	0.2	0.4	0.9	0.4	1.5	4.1	11.2
Open Brethren	0.1	1.3	1.9	6.0	1.0	2.0	0.6
Any Pentecostal	0.9	7.7	6.2	14.2	2.3	2.0	7.5
Other Church	1.9	4.9	7.2	9.5	6.3	5.4	17.1

^a Union or cooperating parish of Anglicans, Presbyterians and/or Methodists

7 Discussion

As well as providing basic data on religion in NZ, this study has provided information on the extent of religious switching and its connection to various demographic factors. The latter results confirm findings by researchers in the - very different - US religious marketplace (Kosmin and Keysar, 2006) and elsewhere (Barro et al, 2010).

Some commentators equate ticking the 'No Religion' box in the Census to secularism, and conflate that with atheism or having no religious beliefs. The term 'secular' is a little problematic - in one sense NZ has always been a secular country even when it was 99% Christian: There has never been a state church. But at least in terms of beliefs the NZES study has shed light on the Census 'No Religion' option. It indicates that one cannot simply equate this Census category with having no religious beliefs. Table 2 showed that in 2011, nearly 10% more respondents ticked the 'No Religion' box than had 'No religious beliefs'. Then looking specifically at those who ticked 'No Religion', Table 3 showed that just 57% of these had no religious beliefs, while 9% described themselves as very or somewhat religious; the remainder describing themselves as 'Just not very religious'. Table 4 showed that 1.6% of those ticking 'No Religion' choose to attend religious services frequently, and nearly 10% attend occasionally. Thus 'No Religion' may mean quite different things to different people:

to some it does mean having no supernatural beliefs; to others it may mean not attending any organised church or religious gathering; while others may attend services but do not identify themselves as committed members of a denomination. Interpretation of 'No Religion' must be nuanced: this observation confirms that the trends seen in the US context by (Lim et al, 2010), (Sherkat, 2014) and others, are generalizable to other Western societies.

Many researchers have noted that religious affiliation is very fluid in the USA. (Lim et al, 2010) adopted the word 'liminal' to describe those religious 'nones' who are particularly likely to later to quote a religious affiliation (and perhaps at a later stage describe themselves as having 'No Religion' again). Tables 5 - 8 illustrate the fluidity of religious affiliation in New Zealand. In Table 5 nearly 15% of respondents changed their response from 'No Religion' to some other answer just three years later. Conversely 5.8% of those ticking a religious answer changed to 'No Religion' three years later. (Despite the difference in change rates, slightly more people overall changed to 'No Religion' than from it, because of the difference in initial counts). A limitation of Table 5 is that it may be slightly biased towards older respondents, since it is based on panel data. Also the regression analyses in Tables 6 and 7 are not weighted, so the data are biased towards those willing to complete a survey on political matters: Again this may be biased towards older rather than younger citizens. Nevertheless the evidence is clear that 'No Religion' is a somewhat fluid state (rather than an absorbing state in the mathematical sense). This suggests the 'liminal' concept generalizes to religion in other Western societies.

Table 6 shows that the fluidity of 'No Religion' is not entirely random (as could be the case if a person was simply ambivalent about whether to tick 'No Religion' or some other category). Rather, changing to or from 'No Religion' is related to demographic variables. Males were more likely to abandon religion than females, but equally likely to move from 'No Religion' back to nominating an affiliation. For the other variables a theme may be discerned - that change to/from 'No Religion' is associated with periods of life change and uncertainty. The young, single or divorced, people who have not managed to complete university studies, and Asians (who are mostly first-generation immigrants) had higher rates of changing from ticking a religion to ticking 'No Religion'. Conversely those over 60 years, and those whose spouse has died, were more likely to change from 'No Religion' and tick a religious affiliation. Perhaps a drawback here is the social support offered in religious gatherings. It has long been known that religious change may be associated with one's stage of life

((Smith and Sikkink, 2003), (Bengtson et al, 2015). A strength of this paper is that it quantifies this effect for a three-year window.

Table 7 confirms that the majority of those who change from a religion to none are those who never attend services, and either have no religious beliefs or are just not very religious. The majority who dropped out of religion in NZ were from the larger Protestant churches. In the NZ context this means Anglican, Presbyterian or Methodist churches: in northern European countries the corresponding equivalent would be Lutherans. In contrast (Kaufmann et al, 2012) show that recent religious decline in Europe has occurred mainly in Catholic-majority countries. They argue that Protestant decline in Europe has already mainly occurred and may be bottoming out (cf. (Burkimsher, 2014)). Bullivant (2016), reporting on the state of religion in England and Wales as revealed by the British Social Attitudes study, shows that Anglican percentages declined by half between 1983 and 2014, while Catholic percentages had slightly increased. However Bullivant notes that 'cradle Catholics' declined nearly 20% in 20 years, so the Catholic population percentage may have been kept high by immigration. In NZ, NZ-born Catholics declined by 9.6% in 12 years. It is worth noting that all religious groups suffer some dropout. This study broadly confirms the findings of (Troughton et al, 2014).

Table 8, using data from the NZ Church Life Survey shows that among those who continue to attend church there is a lot of movement between denominations, especially among Protestants. These data are different to the NZES in that there was no time limit - a person's previous church could have been 30 years before. Nonetheless it is interesting that (aside from 'Other religious gathering') there were very few rows (previous church) that contribute less than 1% of the attendee responses for each current denomination (column). In other words all denominations take substantial numbers from almost all other denominations. Assuming similar cross-denominational movement in the Census would suggest Census counts have to be taken with a grain of salt - even for small denominations such as Baptist or Pentecostals whose adherents would seem to be very committed in terms of religiosity and attendance. Numbers in these small denominations may change markedly due to circumstances or personalities, with ready switchers moving on to greener pastures.

A limitation of this study is that some individuals are included more than once in Tables 5 -7. An alternative approach would have been to randomly choose just one three-year period per individual, which would have ensured independence but with less use of the available data. Another approach would have been to model, say, affiliation change in 2005-08 conditional on the de-

mographic variables, and then separately model affiliation change in 2008-11, conditional on the same demographic variables but also on whether there was a change in affiliation and/or attendance in the preceding three years. This is the approach used in (Suh and Russell, 2015). The disadvantage of this approach is that it requires separate regression estimates of virtually the same demographic effects. Moreover though the data within each regression are indeed separate individuals and therefore independent, the regressions as a whole are not independent since the samples they are based on have overlap.

This study has presented data on religious affiliation, religiosity, attendance, and switching, for NZ, one small Western country. It would be interesting to have data from more Western countries on the extent of switching, and the possible implications for the continuation of organised religion in the West.

References

- Abrams D, Yapple H, Wiener R (2011) A mathematical model of social group competition with application to the growth of religious non-affiliation. *Physical Review Letters* 107:088,701, DOI 10.1103/PhysRevLett.107.088701
- Barro R, Hwang J, McCleary R (2010) Religious conversion in 40 countries. *Journal for the Scientific Study of Religion* 49(1):15–36, URL <http://www.jstor.org/stable/40664674>
- Bengtson VL, Silverstein M, Putney NM, Harris SC (2015) Does religiousness increase with age? Age changes and generational differences over 35 years. *Journal for the Scientific Study of Religion* 54(2):363–379, DOI 10.1111/jssr.12183
- Brenner P (2016) Cross-national trends in religious service attendance. *The Public Opinion Quarterly* DOI 10.1093/poq/nfw016
- Bullivant S (2016) Contemporary Catholicism in England and Wales: a statistical report based on recent British Social Attitudes survey data. URL <http://www.stmarys.ac.uk/benedict-xvi/docs/2016-may-contemporary-catholicism-report.pdf>
- Burkimsheer M (2014) Is religious attendance bottoming out? An examination of current trends across Europe. *Journal for the Scientific Study of Religion* 53(2):432–445, DOI 10.1111/jssr.12111
- CRANZ CRANZ (2016) Church Life Survey New Zealand. URL <https://craorgnz-wwwsgssl.ssl.superpcp.com/content/>

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- Jackson H (1983) Churchgoing in nineteenth century New Zealand. *New Zealand Journal of History* 17(1):72–89
- Kaufmann E (2011) *Shall the religious inherit the Earth? Demography and politics in the twenty-first century*. Profile Books, London
- Kaufmann E, Goujon A, Skirbekk V (2012) The end of secularization in Europe?: A socio-demographic perspective. *Sociology of Religion* 73(1):69, DOI 10.1093/socrel/srr033
- Kosmin B, Keysar A (2006) *Religion in a free market*. Paramount Market Publishing: Ithaca, New York
- Krosnick J, Alwin D (1987) An evaluation of a cognitive theory of response order effects in survey measurement. *The Public Opinion Quarterly* 51:201–219
- Lim C, MacGregor CA, Putnam RD (2010) Secular and liminal: Discovering heterogeneity among religious nones. *Journal for the Scientific Study of Religion* 49(4):596–618, DOI 10.1111/j.1468-5906.2010.01533.x
- McDonald B (2015) Demography of religions - the example of New Zealand. *Statistics and Demography: the Legacy of Corrado Gini* Corrado Crocetta (ed) URL <http://meetings.sis-statistica.org/index.php/ginilegacy/SIS2015/paper/view/3499>
- Pew Research Center (2015) *The future of world religions: Population growth projections, 2010-2050*. URL http://www.pewforum.org/files/2015/03/PF_15.04.02_ProjectionsFullReport.pdf
- Schwadel P (2010) Period and cohort effects on religious nonaffiliation and religious disaffiliation: A research note. *Journal for the Scientific Study of Religion* 49(2):311–319, DOI 10.1111/j.1468-5906.2010.01511.x
- Sherkat DE (2014) *Changing Faith: The Dynamics and Consequences of Americans Shifting Religious Identities*. NYU Press, URL <http://www.jstor.org/stable/j.ctt9qfz3c>
- Skirbekk V, Kaufmann E, Goujon A (2010) Secularism, Fundamentalism, or Catholicism? The religious composition of the United States to 2043. *Journal for the Scientific Study of Religion* 49(2):293–310, DOI 10.1111/j.1468-5906.2010.01510.x
- Smith C, Sikkink D (2003) Social predictors of retention in and switching from the religious faith of family of origin: Another look using religious tradition self-identification. *Review of Religious Research* 45(2):188–206
- Statistics New Zealand (2016) *2013 census*. URL <http://www.stats.govt.nz/Census/2013-census.aspx>

- Suh D, Russell R (2015) Non-affiliation, non-denominationalism, religious switching, and denominational switching: Longitudinal analysis of the effects on religiosity. *Review of Religious Research* 57(1):25–41, DOI 10.1007/s13644-014-0197-7
- Tomka M (2011) *Expanding religion: religious revival in post-communist Central and Eastern Europe*. Walter de Gruyter: Berlin
- Troughton G, Bulbulia J, Sibley C (2014) Strength of religion and the future of the churches. *Stimulus* 21(2):26–34