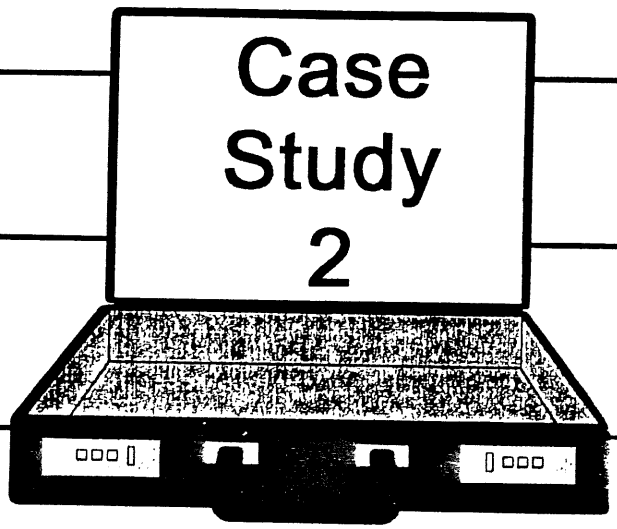

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Estimating Church AAGR from Founding Dates

One of a series of practical missions research case studies

Key Words: Growth rates, institutional research, surveys, population to church ratio, projection

Abstract: To calculate an average annual growth rate (AAGR) for church multiplication (number of churches, not church membership) it is necessary to have observations from at least two points in time. It is possible to estimate church AAGRs based on a single survey if the survey collects information about dates of founding for the churches.

Background: After surveying nearly all the Protestant churches of one of the regions of the Philippines, I discovered that I could estimate church growth rates for that region and for various church affiliations in the region. Knowing the founding dates for the churches allowed me to estimate the number of churches which existed at various points in time. Knowing quantities of churches at various points of time is all you need to calculate an AAGR for that period.

Critical to estimating growth rates using this method is knowing the founding date for a large sample of churches. In the region we surveyed we found 2,326 churches. We believe that we identified at least 90% of the actual number of churches.

Of these 2,326 churches we knew the founding date for 1,422 of them (61%). Even if we did miss 10% of the churches in the region, we still would have a sample representing more than half of all the churches in the region.

Knowing the distribution of founding dates for more than half of the churches in the region, we make an assumption that the other churches, whose founding dates we do not know, have the same distribution of founding dates.

Methodology: **Table 1** shows the number of churches planted in each period. The Protestant movement in the Philippines began at the turn of the century when the Spanish-American War ended. The first period stretches from then until 1940. The last period is for less than a full decade. Otherwise each period is a decade. It is clear from the table that an increasing number of churches were planted in each decade beginning with the 1940's.

Table 2 shows the cumulative number of churches planted up to the end of the period. The cumulative number of churches is found by adding up all the churches planted in previous periods for each end point. The total cumulative churches planted prior to 1950 consists of churches planted 1900 to 1940 plus those planted between 1941 and 1950; 104 + 26 = 130. The total for 1960 is 130 plus those planted in the Fifties: 130 + 94 = 224, etc. There is a church mortality factor at work here. It will be acknowledged later.

It is important to note that in **Tables 1** and **2** we do not have estimates for the total number of churches planted for the region. Rather these numbers reflect only a sample out of the total for which we know the founding dates. But because of our assumption of similar distribution, the relationship between these numbers will allow us to estimate AAGRs for the whole region.

It was obvious from the data that year of founding was often approximated because of the great increase in number of churches planted in 1945, 1950, 1955, etc. For this reason I chose periods which would distribute those modal points evenly in the periods. I chose a ten year period instead of a seven year period.

Table 1
Churches Planted in each Decade

Time period	1900-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1987
Churches Planted	104	26	94	154	295	749

Table 2
Cumulative Churches Planted up to Date

End date	1940	1950	1960	1970	1980	1987
Cumulative Churches	104	130	224	378	673	1,422

AAGR is derived from the following relationship:

$$N \times (1+(AAGR/100))^{r} = N'$$

where N = number of churches at the start of the period
N' = number of churches at the end of the period
r = period of time in years.

Based on this formula for calculating growth rates and the number of churches and dates from our survey, we derive an estimate of the AAGR for churches in this region. (**Table 3**) The LOTUS 123 equation to calculate the AAGR knowing the beginning and ending number of churches and the intervening time in years is:

(@EXP (@LN (N'/N) /r) -1) x 100

Table 3
AAGR for Time Periods

Time period	1900-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1987
AAGR	-na-	2.2	5.6	5.4	5.9	7.8

Analysis: **Table 3** shows growth rates for churches in this region for each recent decade. A growth rate was not calculated for the first period due to small sample size. The table indicates that the AAGR for churches was about 5.5 for most of the Fifties, Sixties, and Seventies. The slightly higher rate for the Seventies may have been pulled up by a higher rate at the end of the decade. This would be supported by the notable increase in the Eighties. The DAWN 2000 movement was birthed in the mid-Seventies and church multiplication became the major theme of many of the churches' leaders and among many denominations.

Protestant churches can be divided into several groups more or less along the lines of theological tradition. It is very helpful to calculate AAGRs for each of these groups to observe their respective growth rates and to see if the common wisdom about their growth holds true. I chose to divide up the sample along these lines to compare growth rates between the various traditions. See **Tables 4** and **5**.

Table 4
Churches Planted in each Decade

Time period	1900-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1987
Baptist	8	3	10	15	45	132
Pentecostal	0	1	13	24	53	218
Independent	22	5	18	43	71	167
Mainline	70	12	28	30	28	71
Evangelical	4	5	25	42	98	161

Table 5
Cumulative Churches Planted up to Date

End date	1940	1950	1960	1970	1980	1987
Baptist	8	11	21	36	81	213
Pentecostal	0	1	14	38	91	309
Independent	22	27	45	88	159	326
Mainline	70	82	110	140	168	239
Evangelical	4	9	34	76	174	335

Figure 1
Growth in Number of Churches for Five Traditions

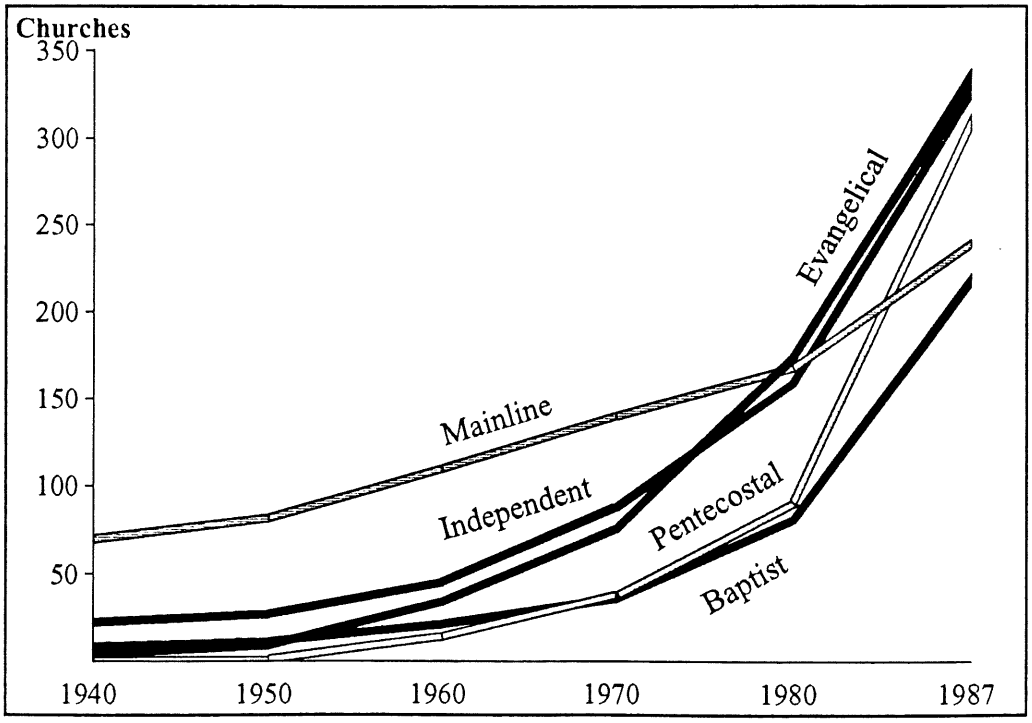


Figure 1 shows the growth in number of churches for the five different traditions. Clearly each one is growing in the number of churches. This graph does reflect the common understanding of what has been happening in the various groups. The mainline churches had the largest presence in the early part of the century but their growth slowed. The Pentecostals were believed to have had the highest growth in recent years.

Using the technique illustrated before, we can calculate the estimated AAGRs for each group and report them in **Table 6.**

Table 6
AAGR for Time Periods

Period	1900-1940	1941-1950	1951-1960	1961-1970	1971-1980	1981-1987
Baptist	-na-	3.2	6.7	5.5	8.4	14.8
Pentecostal	-na-	-na-	-na-	10.5	9.1	19.1
Independent	-na-	2.1	5.2	6.9	6.1	10.8
Mainline	-na-	1.6	3	2.4	1.8	5.2
Evangelical	-na-	8.4	14.2	8.4	8.6	9.8

Figure 2
Changing AAGRs for Five Traditions

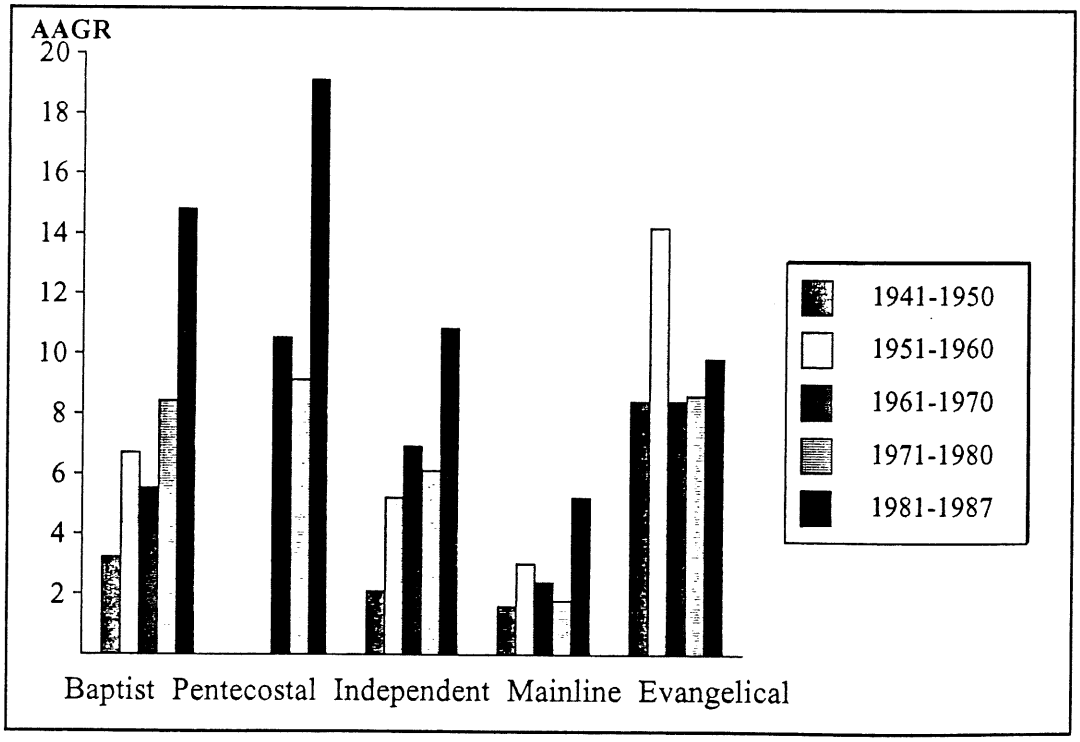


Figure 2 shows that growth *rates* increased for each church tradition during the last period studied, 1981 to 1987. Baptist churches show increasing growth rates in all but the sixties. During the last period studied they had a AAGR of more than 14%.

The Pentecostal churches had explosive growth during the Eighties after having very significant growth during the previous two decades. (Notice that AAGRs for the first three periods were not reported in the table or graph. This is because of the small sample size leading to unrealistic AAGR values.)

Even Mainline Churches, which have had a very low growth rate over the last half of this century, doubled their rate of growth in the Eighties!

Extension: Having a good estimate of the growth rate for the first seven years of the Eighties, it is possible to project the number of churches to 1990. Assuming the growth rate is 7.8 and the number of churches in 1987 was 2,326, then the number of churches in 1990 (three years ahead) is:

$$2{,}326\ (\ 1 + 7.8/100)^{3} = 2{,}914$$

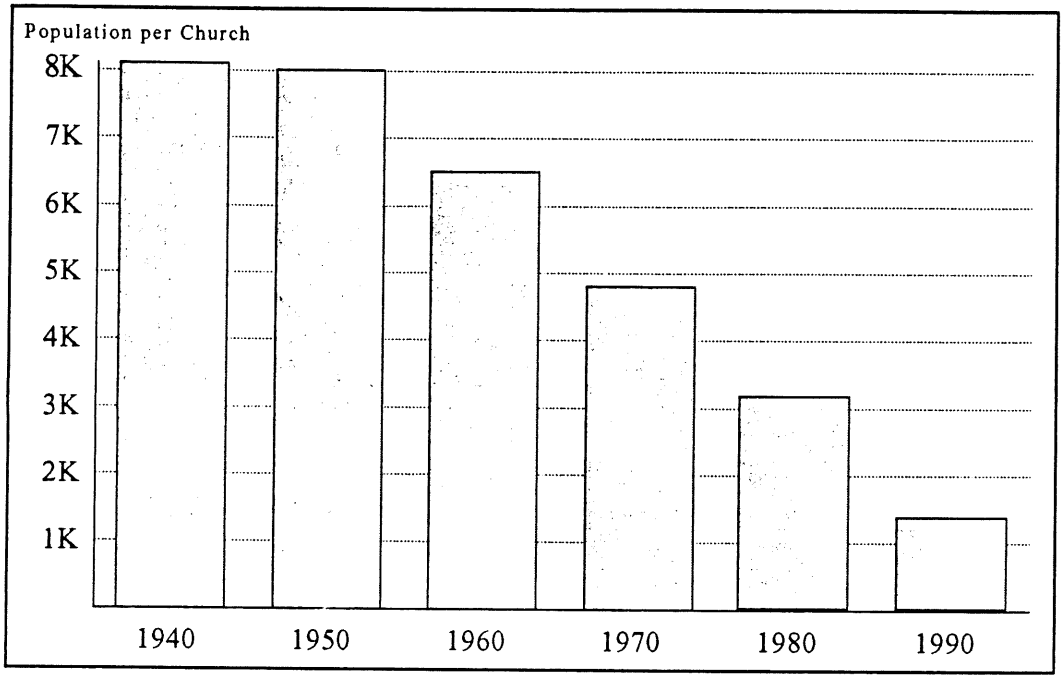
A measure of church saturation which is very frequently used in the Philippines is the population to church ratio. A church for every 500 to 1,000 people represents a high degree of church saturation. Very few regions have this kind of ratio yet. But based on the data from this survey and government population figures we can see a very positive trend in **Table 7**' s population to church ratio. The first line of **Table 7** shows the cumulative number of churches planted for which we know the founding date. But this represents only 61% of all the churches found in the region. Line two of the table reflects the total cumulative number of churches planted to date. The figure for 1990 on the first line is number of churches with a founding date in 1987 (1,422) projected three years hence: $1{,}422 \times (1+7.8/100)^{3} = 1{,}781$. **Figure 3** graphs the declining population to church ratio over the last half century.

Table 7
Population to Church Ratio

End Point	1940	1950	1960	1970	1980	1990
Churches with founding date	104	130	224	378	673	1,781
Estimated total churches	170	213	366	618	1,101	2,914
Total Population	1,376	1,701	2,363	2,967	3,477	3,911
Pop/Chr Ratio	8,100	8,000	6,500	4,800	3,150	1,350

Figure 3

The number of churches is growing faster than the population



Pitfalls: The survey for this region, including its 11 provinces, took almost three years, due to sporadic funding for the project. Because of this long period, I almost made a mistake in choosing the ending time point for the last period of our survey. The first provinces to be surveyed were done in early 1988, the later ones were not finished until mid 1990. But we knew the number of churches planted for the entire region only up through 1987, not through 1990. We could not go through 1990 because we did not know the number of churches planted in those first provinces after our survey was taken. Hence, all the churches planted later than 1987 we ignored for this region. The correct ending time is 1987 not 1990.

Evaluation: This method is probably one of the most objective methods of estimating regional growth rate of church multiplication. It does not rely on denominational statistics but rather on current data which has been acquired through surveys and interviews. Related to this is the fact that many independent churches and denominations which don't submit records to a central office were included in this study. It provides a very comprehensive picture based on verifiable data.

There are some drawbacks to this method of estimating AAGR for churches, though I believe they are minor when compared to other methods.

First, I believe that the estimate for the last period will be biased on the high side due to the church mortality factor. The churches we surveyed were all living churches. No doubt, some of the churches which were planted in the twenties, thirties, forties and fifties disbanded or met some other end. We did not find those churches in our survey. Some of the churches planted in the Eighties will probably die too. But we counted these churches in our survey.

In short, growth rates for earlier periods have already been adjusted for church

mortality (the churches which are going to die are probably already dead), the estimate for the last period has not been so adjusted (the churches which are going to die may not be dead yet) and therefore may be slightly high.

I have not seen any studies on church mortality but I suspect that the bias introduced by this phenomenon is small.

Second, this estimate may be biased by the propensity of a surveyor to collect data on only one or two types of churches. For example, if the surveyor were from a main line church and tended to interview pastors from those types of churches and to avoid charismatic churches, the data would lead the researcher to conclusions that church growth in the whole region was more like that of the mainline churches (slower) than that of the charismatic churches (faster). But this problem is typical of all survey research and should be guarded against as best as possible. I believe that this kind of bias is minimal in this study because of the size of the sample (more than half of the total population).

The biggest drawback to this method is not statistical bias but cost. The researcher has to actually canvass people from many churches and this can be for a very large area.

Impact: The trend which is very strongly portrayed in the tables in this document is a very heartening one for the church. Since the DAWN movement began there has been a very definite upswing in church growth. The growth targets, programs and strategies are bearing fruit. By these measures there is cause for thanksgiving and encouragement. At the current rates of growth, there soon will be a church for every thousand people in this region of the Philippines.

Groups with slower growth may have been spurred to reevaluate their focus in light of this information.

Editor: Thayer Allison, **Layout:** Wendy Newell. Copies of this and other OC Research Case Studies are available for $3 each from the **OC International Research Office**, PO Box 36900, Colorado Springs, CO 80936. Phone:719-592-9292, FAX:719-592-0693, CompuServe:71034,256.