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# A Demographic Study of Cuban Freemasons : 1945-2008

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# Outline

- Introduction and background
- Demographic study summary
- Details and Calculations
- Discussion
- Conclusions

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# Objectives of this paper

- Characterize Cuban Freemasons (CF)
  - And describe how they became what they are
- Identify Factors in such Trajectory
  - Via comparing time series with historical events
- Estimate Factor Contributions/Weights
  - And provide models for these developments

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# What are the Freemasons?

- “The organization of morality”
  - ‘To make some good men, better.’
- Independent of any government
- Discourage partisan politics or religion
- Admit adult men of all races, professions,
  - Political persuasions, religions, social class, etc.
- Philosophy of tolerance and brotherhood

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# Are Cuban Freemasons important?

- *One of the oldest*
  - Over 150 years of continued existence
- One of the largest
  - Nearly 30K members, nation-wide
- One of the most widely spread
  - Over 300 lodges, one in every town
- Internationally known
  - XIX Century: Washington, Bolivar, Marti
  - XX Century: Cardenas, Churchill, Allende

# Comparative US/Cuba Membership and Definition of *Effective Masons*

**Effective masons:** number per 1000 ha, with respect to *population at risk* (i.e. men, of required age, circumstances and requirements to belong).

USA	Year	Population	Masons	/1000s	Effective
	<b>1960</b>	179,323,175	4,103,000	22.88	91.5
	<b>2000</b>	281,421,906	1,800,000	6.4	25.6
<b>Cuba</b>	<b>1960</b>	6000000	34000	5.67	22.7
	<b>2000</b>	11000000	29000	2.6	10.3

# Membership Growth and Decay

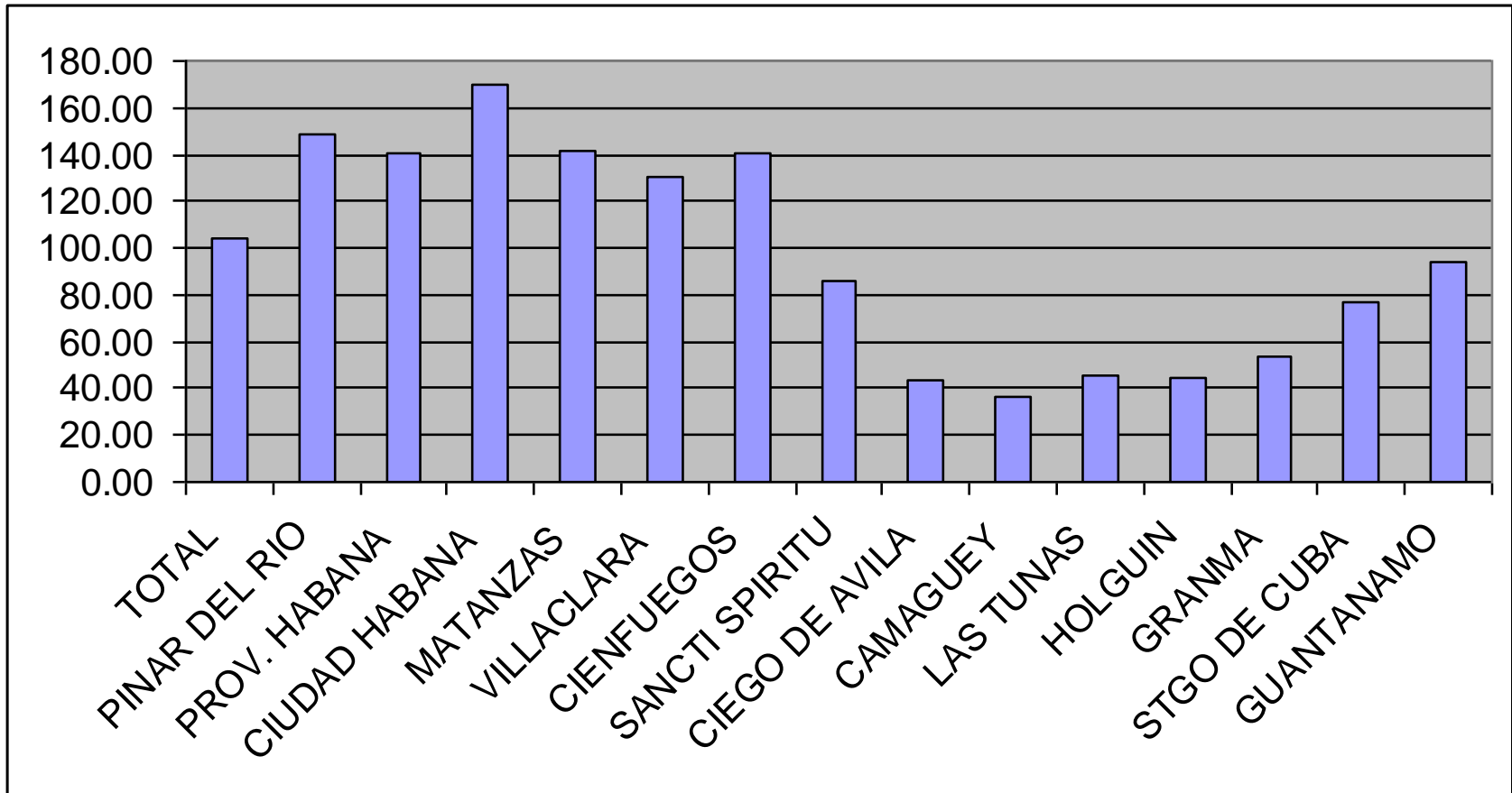
Index	KeyYear	TtMbr	Effect.	<u>Total</u>	<u>Members</u>	<u>Effective</u>	<u>Members</u>
				TotPrdTMbr	AvAnualTM	TotPrdMbEf	AvgAnualEf
1	1945	15361	12.17	*	*	*	*
14	<b>1958</b>	<b>34025</b>	<b>20.5</b>	120%	9.3%	68%	5.0%
24	1968	25824	12.47	-24%	-2.5%	-40%	-4.0%
27	1971	26659	12.28	3%	0.0%	0.0%	0.0%
38	<b>1982</b>	<b>19690</b>	<b>7.98</b>	-26%	-2.4%	-35%	-3.2%
47	1991	21962	8.35	12%	1.3%	5%	0.5%
56	2000	29225	10.3	33%	3.7%	24%	2.5%
64	2008	29110	10.2	-3%	0.0%	0.0%	0.0%

Demographic  
results by  
province, circa  
2007: Note  
how the West,  
more urban  
and developed,  
has a higher  
index of  
effective  
masons.

PROVINCE	Lodg	Mmbrs	PctLog	PctMb	Effect
TOTAL	316	29127	100.00	100.00	10.42
PINAR DEL RIO	17	2706	5.38	9.29	14.90
PROV. HABANA	29	2494	9.18	8.56	14.03
CIUDAD HABANA	111	9329	35.13	32.03	16.95
MATANZAS	28	2370	8.86	8.14	14.14
VILLA CLARA	29	2667	9.18	9.16	13.05
CIENFUEGOS	14	1387	4.43	4.76	14.04
SANCTI SPIRITU	11	991	3.48	3.40	8.61
CIEGO DE AVILA	8	449	2.53	1.54	4.36
CAMAGUEY	14	709	4.43	2.43	3.62
LAS TUNAS	6	604	1.90	2.07	4.60
HOLGUIN	12	1138	3.80	3.91	4.46
GRANMA	10	1104	3.16	3.79	5.37
STGO DE CUBA	19	1992	6.01	6.84	7.69
GUANTANAMO	7	1187	2.22	4.08	9.36



# Graphical Interpretation:



# Contingency Table for East/West

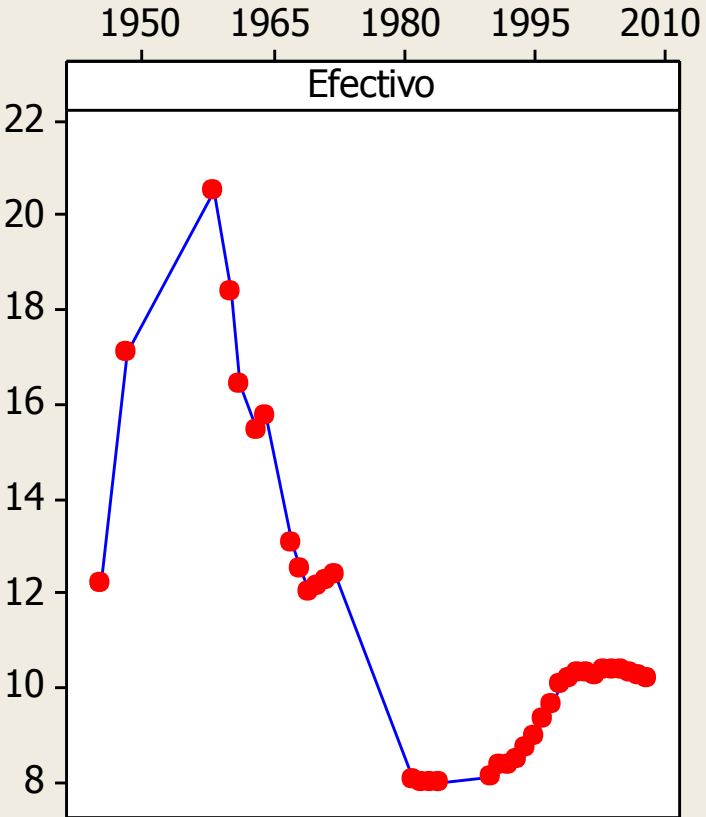
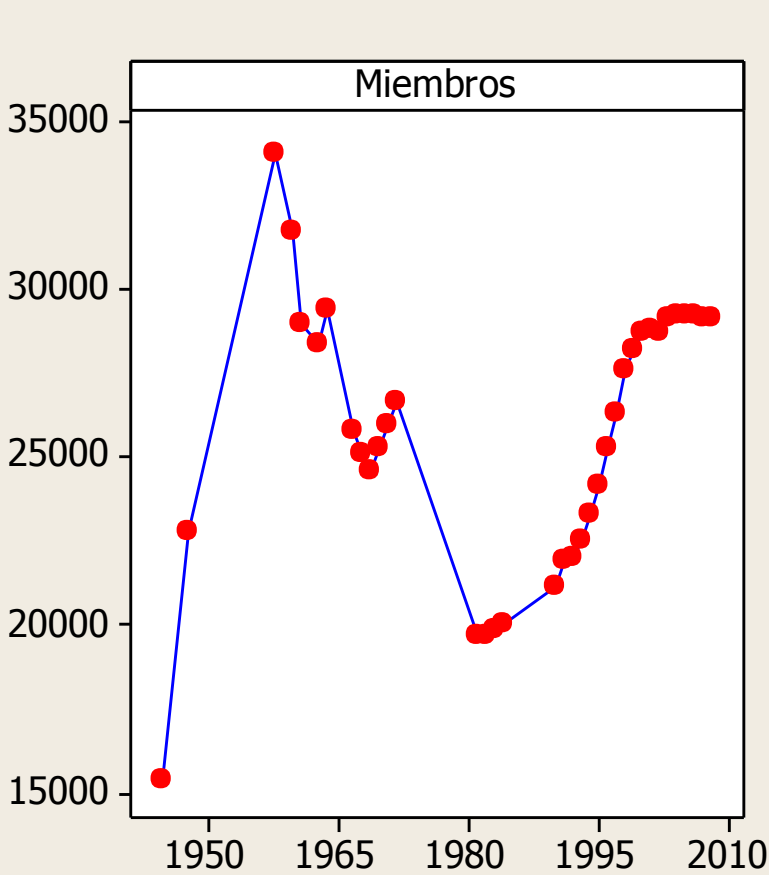
	Western / Exp	Eastern / Exp	Totals
EffMasons < 10.4	0 / 3.43	8 / 4.57	8
EffMasons > 10.4	6 / 2.57	0 / 3.43	6
Totals	6	8	14

$$\chi^2_1 = \sum \frac{(O_i - E_i)^2}{E_i} = 14$$

Eastern Provinces are more rural, more  
scarcely populated less developed

# Time Series: Total v. Effective annual membership series:

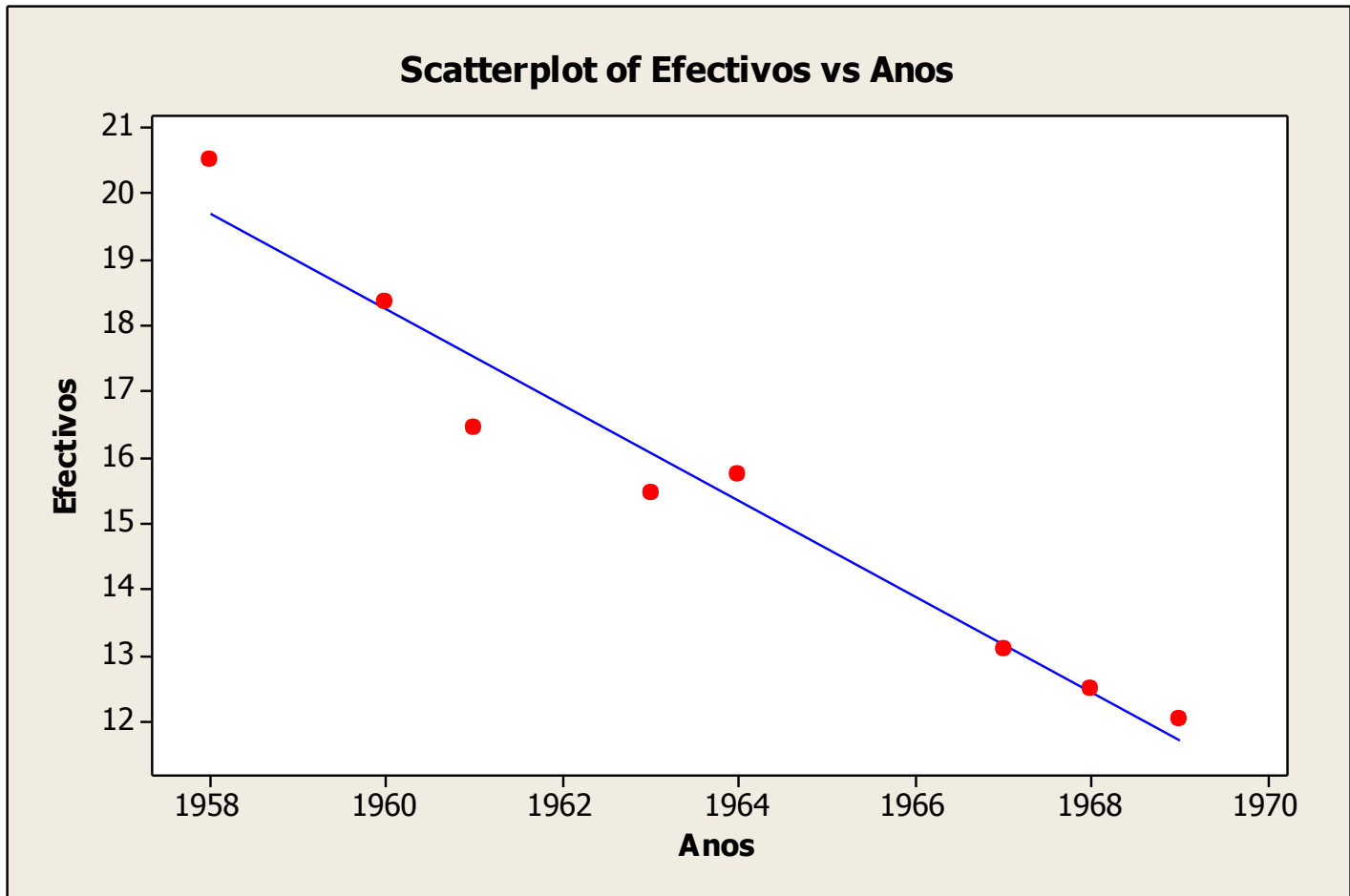
**Miembros Por ano: 1940 - 2010**



**AÑO**

## Characterization of CF historical periods: 1945 to 2008:

<b>Historical Epoch</b>	<b>Years</b>	<b>Membership trend</b>	<b>Relevant Events</b>
<u>Before the revolution</u>	1945-1958	Accelerated growth	Grau, Prío and struggle against Batista
<u>First Years after the revolution</u>	1959-1967	Accelerated reduction	Emigration; B. Pigs; October Crisis; Rev.. Offensive; Umap
<u>Second Revolutionary Period</u>	1968-1971	Some stability	Zafra de los 10 Millones; End of Legal Emigration
<u>Third Revolutionary Period</u>	1972-1981	Moderate reduction	State Economy; Visits from “Community”; Mariel
<u>Fourth Revolutionary Period</u>	1982-1990	Slow growth	Economic Liberalization after Mariel: Gorbachev; Disolution of USSR
<u>Fifth Revolutionary Period</u>	1991-2000	Accelerated growth	IV Congress of PCC; Special Period; Rise of Tourism
<u>Sixth Revolutionary Period</u>	2001 to date	Stability	New Millenium; Tourism; Support from Venezuela



First years of revolution: accelerated reduction of members: strong emigration;  
B. Pigs; October Crisis; statization of economy; UMAP; revolutionary offensive

# Membership flow in any organization

- $\text{Members CurrentYear} =$ 
  - $\text{Members PreviousYear} - \text{Losses} + \text{Gains}$
- In the CF case, we break down Losses & Gains into:
- $\text{Gains} = \text{New members} + \text{Re-affiliations}$
- $\text{Losses} = \text{Withdrawals} + \text{Payment} + \text{Deaths} + \text{PolIndcd}$
- Politically induced losses include: Emigration; and
  - Left or never joined, due to adverse government policies
  - Left because new ideology was more attractive/fulfilling

# Forecast Equation

$$x_t = x_{t-1} - 1.5\theta_{t-1}\phi_{t-1}/4 - 0.01x_{t-1} - 0.02x_{t-1} + 0.007x_{t-1} + \varepsilon_t$$

Where  $x_t$  represents membership in the GLC for Year  $t$ ,  $\theta_t$  represents the *Effective Masons index* for year  $t$ ,  $\phi_t$  represents the yearly immigrants to the USA in Year  $t$  (divided by four because half are women and, of the remaining half, still one half is composed of males who are either too young, too old or have criminal records or physical or mental problems, which cannot be masons). Finally,  $\varepsilon_t$  is the White Noise.

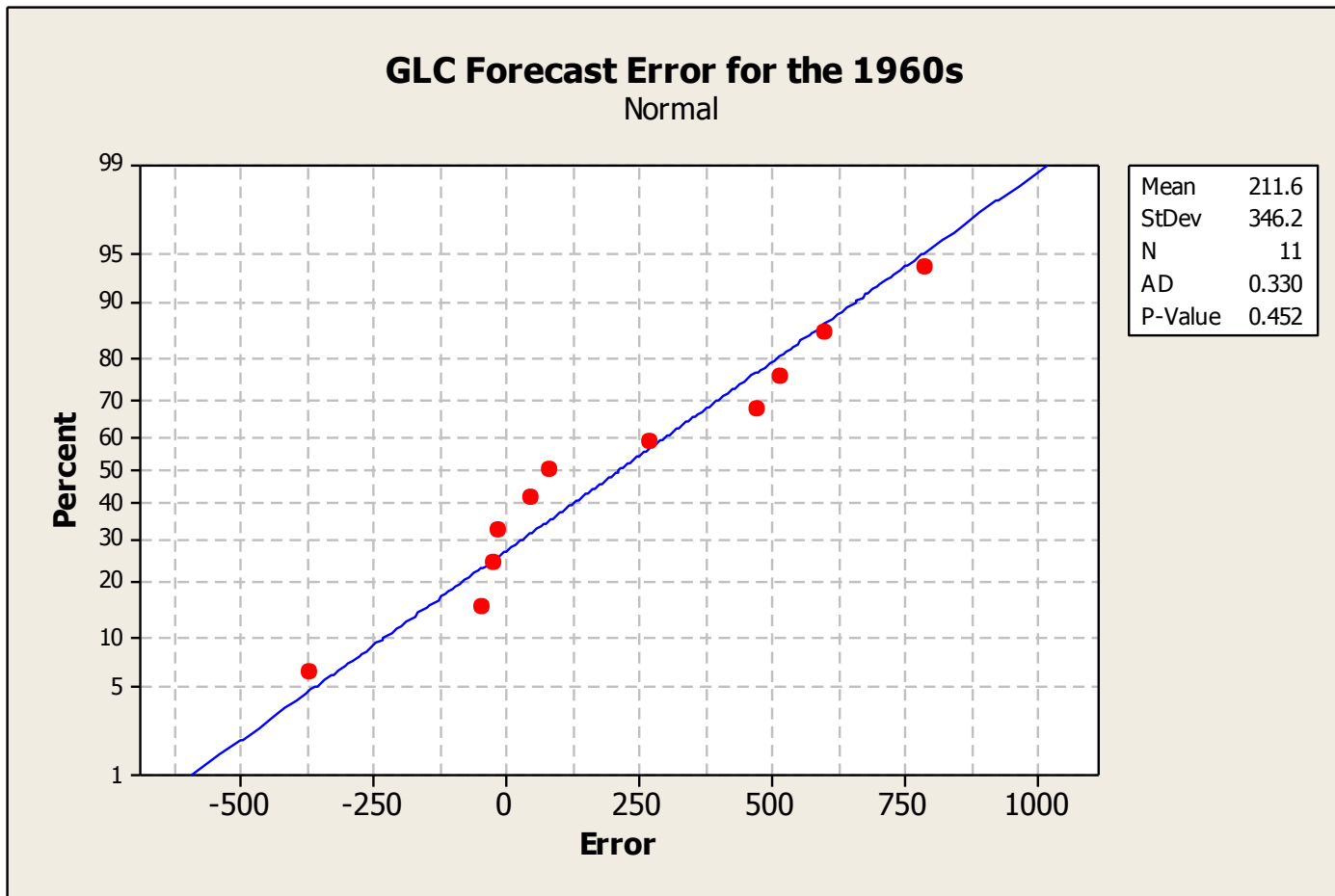
# Equation Constraints:

We use an annual coefficient of mortality of 1% ( $\alpha_1$ ), which is 50% higher than the coefficient reported by the UN for year 2000. We use a value of 0.67% ( $\alpha_2$ ) for membership drops due to preferring the new revolutionary ideology. We use another 0.67% ( $\alpha_3$ ), for membership drops due to concerns about government political or economic reprisals against masons; and we use another 0.67% ( $\alpha_4$ ), for ordinary resignations, due to finding Freemason work not of their liking.. Finally, the annual value for Effective Masons is  $\alpha_5$ . For a convenient  $K$ , we have :

$$\sum_{i=1,5} \alpha_i = K$$



# Normality Test for model residuals



## Model with Emigration to USA (INS Data): 1959 -1969

Miembros		Iniciales (en 1959):		34025			Total Algebraicc	
Ano	TotEmigr	Miembros	MasEfectivos	MasEmig(x1.5)	Muertes(1%)	Bajas(2%)	Altas	Total
1959	62,800	32738	0.02051	483	340	681	238	32759
1960	60,781	31492	0.01836	418	327	655	229	31567
1961	50,857	30449	0.01643	313	315	630	220	30454
1962	73,632	28940	0.01643	454	304	609	213	29295
1963	15,535	28621	0.01544	90	289	579	203	28184
1964	15,045	28313	0.01575	89	286	572	200	27874
1965	25,366	27793	0.01575	150	283	566	198	27512
1966	55,422	26657	0.01575	327	278	556	195	26826
1967	49,756	25637	0.01308	244	267	533	187	25800
1968	50,182	24608	0.01247	235	256	513	179	24813
1969	49,415	23595	0.01202	223	246	492	172	23819
<b>Total</b>	508,791			3026	3193	6385	2235	

**Function (Effective Masons x1.5) is annually adjusted yielding an estimate of the number of masons yearly emigrating, providing Lower Bounds, as we are only considering the emigration to the USA, and not to other countries.**

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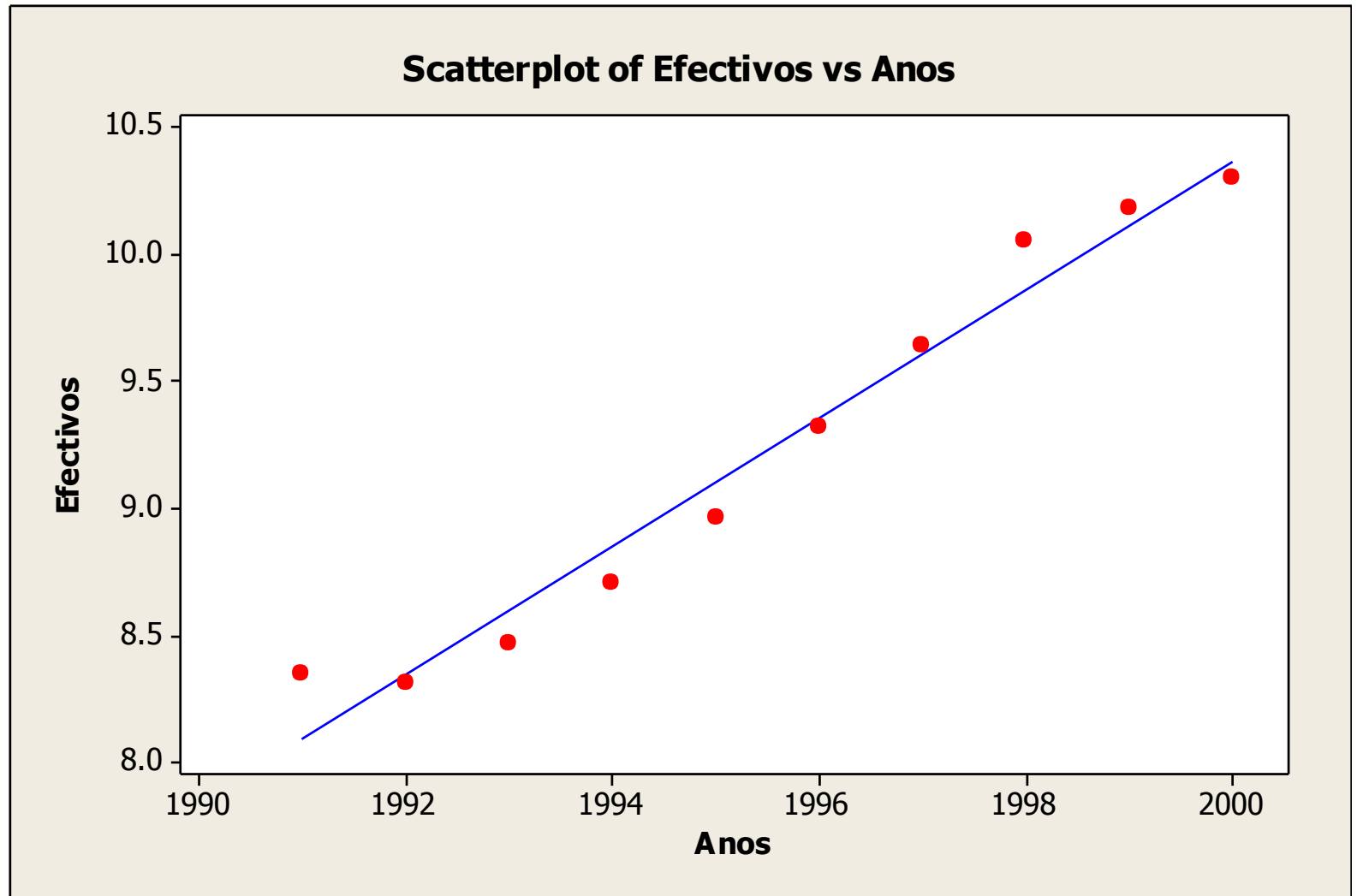
# Membership Reduction: 1959-69

- **Attrition:**  $3K + 3K + 6K = 12K$ 
  - Left the country: 3026 (Lower Bound):
  - Left the Institution for ideological reasons
  - Left the Institution due to government policy
  - Deaths, natural reduction: 3088 (Low.Bd.)
- **Non-Affiliations:**
  - Never (re)affiliated, for ideological reasons
  - Never (re)affiliated, due to government policy
  - Transfers, new *ordinary* affiliations

# Demographic Data for Period 1982 - 91

Notice population growth is the same as that of Masons

Year	Members	Estimate	Population	Estimate
1982	19690	0.009	9865800	0.009
1983	19862	19867	9936700	9954592
1984	20007	20046	10007600	10044184
1985		20226		10134581
1986		20408		10225792
1987		20592		10317825
1988		20777		10410685
1989		20964		10504381
1990	21153	21153	10433000	10598921
1991	21918	21344	10503900	10694311



IV Congress PCC authorizes members; Demise USSR; Private Entpr./Tourism

# Estimation of New/Attrition Rates

AÑO	TotMiemb	StDvNuevo	LBNuevos	UBNuevos	StDevAtr.	LBAtrit.	UBAttrition
1993	22539	0.0016	0.0565	0.0627	0.0010	0.0229	0.0269
1994	23321	0.0020	0.0961	0.1038	0.0016	0.0605	0.0668
1995	24169	0.0019	0.0985	0.1062	0.0015	0.0526	0.0584
1996	25301	0.0020	0.1162	0.1242	0.0017	0.0756	0.0823
1997	26344	0.0020	0.1142	0.1219	0.0016	0.0660	0.0721
1998	27635	0.0019	0.1102	0.1177	0.0018	0.0910	0.0979
1999	28173	0.0017	0.0901	0.0969	0.0016	0.0721	0.0783
2000	28689	0.0016	0.0774	0.0837	0.0016	0.0746	0.0808
2001	28772	0.0015	0.0691	0.0751	0.0016	0.0724	0.0785
2002	28677	0.0014	0.0564	0.0619	0.0012	0.0411	0.0458
2003	29127	0.0016	0.0738	0.0799	*	*	*
<b>Promedio</b>	26613	0.0018	0.0871	0.0940	0.0015	0.0629	0.0688

Both new and attrition rates are large, peaking in 1996-98

# Growth by IV PCC Congress & Economy

Year	Population	Estimate	Members	Estimate	IV-PCC	Difference
1990	10433000	0.007	21153	0.03	0.021	*
1991	10574800	10506031	21918	21788	21597	190
1992	10645700	10648824	21962	22441	22051	390
1993	10716600	10720220	22539	23114	22514	601
1994	10787500	10791616	23321	23808	22987	821
1995	10858400	10863013	24169	24522	23469	1053
1996	10929300	10934409	25301	25258	23962	1296
1997	11000200	11005805	26344	26016	24465	1550
1998	11071100	11077201	27635	26796	24979	1817
1999	11142000	11148598	28173	27600	25504	2096
2000	11176406	11219994	28689	28428	26039	2389

	<b>GrwthRate=</b>	<b>0.003</b>	<b>(0.3%)</b>	<b>Annual</b>	
<b>Year</b>	<b>Population</b>	<b>Estimate</b>	<b>Members</b>	<b>Estimate</b>	<b>Effective</b>
2000	11176405.78	11176406	28689	28689	10.27
2001	11210811.56	11209935	28772	28775	10.27
2002	11245217.33	11243565	28677	28861	10.20
2003	11279623.11	11277295	29127	28948	10.33
2004	11314028.89	11311127	29225	29035	10.33
2005	11348434.67	11345061	29276	29122	10.32
2006	11382840.44	11379096	29192	29209	10.26
2007	11417246.22	11413233	29134	29297	10.21

Notice how 0.3% describes total growth of the country and members of GLC. Last column *effective masons* (10.27) shows no real growth: just keeping up.



# Summary of Growth/Decay Estimates

MembTot	Trend	Year	CoefReg	Rate/Year1	TotChgMbr	RegEst.	Rate/Year2	TotChgMbr
15361	UpFirst	1945-58	1358.0	1435.69	18664	17654.0	0.64097	8.33262
34025	DownFirst	1959-67	-796.0	-1025.13	-8201	-6368.3	-1.02671	-8.21366
25824	Stable70s	1968-71	455.3	278.33	835	1365.9	0.01703	0.05110
26659	DownSec	1972-81	-774.3	-774.33	-6969	-6969.0	-0.48399	-4.35592
19690	SlowUp80s	1982-91	184.3	252.44	2272	1658.8	0.00759	0.06072
21962	UpSecond	1992-00	849.1	907.88	7263	6792.6	0.26730	2.40567
29225	Stable2K	2001-08	58.3	-16.43	-115	408.1	-0.00909	-0.06364

Notice the two different growth estimates by regression :  
Rate/Year1, using Total Membership as response. And  
Rate/Year2, using Effective Masons as response. But  
both estimates agree (i.e. are significant/non significant).

# Conclusions and Summary: 1959-2007

- Net Mason losses between 1959-69:
  - Lower Bound: 10K (includes only emigration to USA)
  - Factor: change of socio-economic & political system
- Net Mason losses between 1970-82: 6K
- 1992 IV Congress PCC & Economy: NEW growth
  - Members of PCC, government officials and agents (Ex Grand Master Collera Vento declared himself as such)
  - Citizens previously concerned about joining CF
  - Dissidents (e.g. 13 of the 75 prisoners of Spring 2003)
- Stabilization, after hitting 29K (in the 2000s)
- CF: a cross-cut of Cuban society (Conglomerate)
  - Economic, political, educational social, racial, religious