韓國人口學會誌 第十三卷 第一號(1990)
The Journal of The Population Association of Korea, Vol. 13, No. 1(1990)

最近 申告資料를 基礎로 한 우리나라의 死亡패턴

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《目　次》

Ⅰ. 序　言

어느 時點이 될지는 豫測하기 어렵지만, 우리가 一生中에 한번은 반드시 겪어야 할 事件은 우리가 죽는다는 事實이 될 것이다. 統計學 用語를 빌린다면, 우리는 태어난 직후 부터 人間의 限界生命에 도달할 때 까지 순간순간 마다 死亡할 수 있는 確率를 가지고 살아가는 것으로 볼 수 있다.

그러나 한가지 指摘할 사항은 死亡確率은 모든 年齡에서 같지는 않고 어떤 法則性이 있다는 點이다. 이러한 法則性을 年齡別로 살펴볼 때 死亡確率은 出生直後에는 높다가 점차 低下하여 10-14歲에서 最低를 기록하다가 점차 上昇하는 패턴을 보이는 것이 一般的이다. 물론 이러한 패턴은 地域에 따라서 또는 어떤 人口集團이 속한 特性에 따라 差異를 나타내기도 한다.

결국 生命表라 하는 것은 어떤 나라나 集團이 經驗하고 있는 死亡패턴을 導出하여 이 死亡패턴이 계속된다는 假定下에 우리가 向後 얼마나 더 살 수 있을까 하는가를 提示하여 주는 一目瞭然한 表라고 定義되는 것이다.

最近에 經濟企劃院 調査統計局에서는 人口動態申告資料를 기초로 1983, 1985, 1987 및 1989年에 對한 生命表를 作成하였다. 따라서 本稿에서는 調査統計局에서 작성한 生命表를 理解하고 活用을 함에 있어 도움을 주고자 生命表의 活用分析, 死亡申告資料의 補完過程, 作成方法과 結果를 살펴보고자 한다.

Ⅱ. 生命表의 活用 分野

오늘날 많은 開發途上國에서의 人口 現象은 점차 낮은 出産力에로의 移行을 보이고 있다. 特히 우리나라의 경우 80年代 중반 부터 出産水準이 낮은 狀態에서 安定化되는 人口學的 變遷의 마지막 段階인 後期的 均衡狀態에 到達되었다. 이러한 人口現象은 社會發展과 함께 人口에 대한 새로운 關心을 일으키는데 공헌을 하였다.

즉, 새로운 人口에 대한 關心은 한마디로 人口의 量에 대한 關心에서 質에 대한 關心으로의 轉換을 뜻한다. 質에 대한 關心의 가장 重要한 部分의

하나가 健康에 대한 關心인 것이다. 이에 따라 年齡別로 死亡時 까지 얼마만큼 健康하게 더 살 수 있는가를 보여주는 生命表는 많은 分野에서 크게 活用되고 있는데, 例示하면 다음과 같다.

① 生命保險會社에서 保險料率의 決定 및 補償費 計算
② 辯護士 等 法律事務所에서 人命補償 計算
③ 停年의 延長 決定
④ 死亡은 出生과 더불어 人口構造의 變動要因으로서 生命表는 人口의 生殘確率을 提供, 各種 計劃에 基礎가 되는 將來人口推計에 使用
⑤ 生命表에서 보여주는 여러 保健指標(嬰兒死亡率, 期待壽命 等)는 各 나라間 比較를 통해서 經濟·社會發展의 尺度로서 利用
⑥ 保健·醫療政策의 樹立 및 評價 資料로 活用
⑦ 얼마나 經濟活動에 從事할 수 있는가를 보여주는 勞動生命表, 그리고 男·女가 結婚하여 얼마나 持續하여 함께 살 수 있는가를 보여주는 結婚生命表의 作成에 活用
⑧ 以外에 生命表 作成技法을 適用함으로써 여러 人口分析(避姙方法의 效果分析 等)에 活用

III. 生命表 作成의 基礎資料

生命表를 作成함에 있어서 가장 필수적인 資料는 年齡別 死亡率(패턴)이 된다. 따라서 이를 어떻게 하면 正確하게 計算하느냐가 生命表 作成의 關鍵이 되는 것이다. 이와같은 年齡別 死亡 패턴을 求하는 데에는 크게 두가지 資料出處로 나누어진다. 하나는 直接的인 方法으로 死亡申告나 標本調査에 의한 것이고, 다른 하나는 間接的인 方法으로 人口總調査의 年齡別 人口構造로 부터이다.

즉, 첫번째 方法은 死亡 하였다는 申告나 調査된 結果를 分子로, 人口 總調査에 나타난 年齡別 人口를 分母로 하여 단순하게 나눈 數値를 使用하는 것이다. 두번째 方法은 두個의 人口 總調査에서 파악된 年齡別 人口構造를 비교하게 되면 1980年의 0-4歲 人口는 1985年에는 5-9歲가 되는데, 이를 기초로 生殘率을 計算하여 生命表를 作成하는 方法이 된다.

그러나 問題는 정확한 死亡패턴을 求함에 있어 死亡申告 資料나 人口 總調査의 年齡別 人口資料가 완전치 않다는 點을 지적할 수 있다. 일반적으로 死亡申告資料에서는 未申告, 遲延申告, 歪曲申告 등이, 그리고 人口 總調査에서는 人口數의 漏落이나 重複 또는 年齡의 잘못 申告 등이 있어 단순하게 計算한 결과를 補完없이 그대로 使用하는 것은 事實을 歪曲시킬 수 있다. 따라서 最近 公表된 生命表는 다소 補完된 死亡申告資料를 分子로, 그리고 별도로 마련된 推計人口를 分母로 하여 計算된 年齡別 死亡率을 기초로 作成되었다.

IV. 死亡申告 資料의 補完過程

死亡申告 資料의 未洽한 점을 지적한다면 다음과 같다. 따라서 正確한 年齡別 死亡率을 求하기 위해서는 이에 대한 補完 作業이 필요로 된다.

- 未申告: 死亡이 發生되었지만 申告를 안하는 경우로서, 특히 嬰兒死亡의 경우 出生과 死亡의 同時申告漏落이 상당히 있음.
- 遲延申告: 死亡發生後 申告를 뒤 늦게(1年 以上 지난 후) 하는 경우로서 總 死亡發生件數의 5 퍼센트 정도로 推定 됨.
- 歪曲申告: 死亡이 있었지만 申告를 미루다가 國民學校 就學前·後, 住民登錄證發給, 第1國民役 申告 및 身體檢査, 戶主相續 등과 관련하여 死亡日字로 이當時에 고쳐 申告하는 경우임.

이에 대한 具體的 補完作業은 각각 다음과 같이 試圖하였다.

첫째, 嬰兒死亡의 경우 出生後 1個月 以內에 死亡하는 確率이 상당히 높은 것이 一般的이다. 그러나 申告를 日齡別 分布로 살펴볼 때 우리는 出生後 한달 以內에 死亡하였다고 申告된 比率이 극히 낮게 나타나 申告漏落이 많음을 알 수 있다. 따라서 標本調査의 結果 및 다른 나라의 資料 등을 利用하여 별도로 嬰兒死亡率을 推定하여 生命表 作成에 적용 하였다.

둘째, 遲延申告의 경우 每年 申告되는 資料를 發生年度別로 區分하여 보면 遲延申告되는 패턴을 쉽게 찾을 수 있다. 따라서 이를 기초로 將來에 遲延申告될 件數(總 死亡發生의 5% 정도)를 推定하여 追加 하였다.

셋째, 歪曲申告에 대해서는 死亡者를 各歲 年齡別로 살펴 보았을 때, 特定 年齡層에서 期待値보다 많게 나타나 歪曲申告가 있음을 알 수 있다. 이는 同 年齡層에서의 死亡 自體가 많다기 보다는 過去의 死亡에 대한 戶籍整理를 미루다가 해당 年齡에서 申告하기 때문인 것이다. 따라서 이의 補正은 該當年齡 前·後의 死亡者數를 기초로 趨勢線을 導出하여 歪曲申告分을 削減 하였다.

以外에도 랜덤誤差(Random Error)가 있을 수 있다. 따라서 이의 除去를 위하여 未申告, 遲延申告 및 歪曲申告를 補完한 資料에다 每 年度別로 3年齡 移動平均法을 적용한 후 다시 各歲 年齡別로 3個年 移動平均法을 적용하여 年齡別 死亡者數를 만들었다. 물론 年齡別 死亡者數를 平滑하는 方法으로는 曲線趨勢 方程式을 推定하여 使用하거나 로지트(Logit)시스템을 적용할 수도 있지만, 이는 原資料의 死亡패턴을 歪曲시킬 수 있어 移動平均法을 적용하게 된 것이다.

V. 生命表 作成方法

例를 들어 1960年에 태어난 出生兒들이 100萬名이라고 할 때, 이들에 대한 平均壽命은 얼마나 되는가? 이에 대한 答은 1960年에 태어난 100萬名이 모두 死亡한 100年 後에나 可能할 것이다. 즉, 100年 後 100萬名에 대한 資料를 모두 蒐集하여 個個人이 산 만큼을 모두 合한 후 100萬名으로 나눈 數値가 바로 1960年에 태어난 出生兒의 平均壽命이 되는 것이다.

만약 이렇게 生命表를 作成할 수 있다면, 이를 우리는 코호트(Cohort or Longitudinal)別 生命表라 하는데 현실적으로 이러한 生命表의 作成은 매우 어렵다고 볼 수 있다. 代身 우리는 지금 막 태어난 出生兒가 向後 살아가는 동안 現在時點에서 나타난 여러다른 年齡層의 死亡率을 계속 똑같이 經驗할 것이라는 假定下에 生命表를 쉽게 作成하게 된다. 이와같이 作成된 生命表를 期間(Period or Current or Cross-sectional)生命表라고 하며, 여기에서 나타난 平均壽命은 未來概念을 뜻한다고 할 수 있다. 따라서 지금 막 태어난 出生兒들이 未來에 겪어야 할 疾病, 戰爭 등이 誘發된다면 그들의 實際 平均壽命은 보다 짧아질 수 있고, 反面 醫學의 發達로 모든 疾病이 退治된다면 그들의 實際 平均壽命은 100歲가 넘을 수도 있는 것이다.

하여튼 우리는 資料問題 때문이거나 또는 國際間 比較를 위해서 期間 生命表를 作成하는 것이 一般的이다. 그런데 이 期間 生命表에서는 假想的인 出生集團을 설정하고 이들의 消滅過程을 살펴보는 것이기 때문에 死亡申告에서 나타난 實際 年齡別 死亡率을 死亡確率로 바꾸어 주는 節次가 必要로 된다. 바로 이 節次에 있어서 여러가지 方法(Reed-Merrell, Greville, Chiang, Keyfitz, Sirken 方法등)이 적용될 수 있는데, 本 生命表 作成에서는 아시아地域 國家에 적합한 Chiang 方法을 적용 하였다. 이 Chiang 方法에 따른 各 項目間의 關係는 다음과 같다.

$$nQx = \frac{n \times nMx}{1+(n-K) \times nMx}$$

nQx : x歲에서 (x+n)歲 期間中의 死亡確率임
nMx : 年齡別 死亡率
K : 死亡 修正係數

0−1歲：K_0 = 男：0.13, 女：0.17
1−4歲：K_1 = 男：1.56, 女：1.46
5−9歲 階級 以上：K = 2.5

$$Ix + n = Ix \times (1 - nQx)$$
$$nDx = Ix - Ix + n$$
$$_1L_0 = K_0 \times I_0 + (1 - K_0) \times I_1$$
$$_4L_1 = K_1 \times I_1 + (4 - K_1) \times I_5$$
$$_5L_X = 2.5 \times (Ix + I_{X+5})$$
$$L_{80} = 3.725 \times I_{80} + 0.0000625 \times (I_{80})^2$$
$$_5Sx = \frac{_5L_X}{_5L_{X+5}} \quad nMx = \frac{nDx}{nLx}$$
$$Tx = \sum_{i=x}^{w} Li \quad Ex = \frac{Tx}{Ix}$$

Ⅵ. 生命表 函數의 說明

生命表는 Mx, Qx, Ix, Lx, Tx, Ex 등으로 區別되는데, 各 函數가 意味하는 것은 다음과 같다.

年齡(x)：x 歲라 함은 x 번째 生日에서 x+1 번째 生日 까지의 期間에 해당하는 사람의 年齡을 뜻함.

年齡間隔(n)：x 번째 生日에서 x+n 번째 生日 까지의 間隔을 n 年으로 表示함.

年齡別 死亡率(nMx)：x 歲에서 x+n 歲 年齡層에 있는 사람들의 死亡率.

年齡 x 歲에서의 死亡確率(nQx)：正確한 年齡 x 歲에서 生存한 사람들이 x 歲에서 x+n 歲 사이에 死亡할 確率임. 그리고 80歲에 到達한 사람들의 死亡確率은 1이 됨.

生存者(Ix)：正確한 年齡 x 歲에서의 生存者 數.

生命表上 死亡者數(nDx)：x 歲에서의 x+n 歲 사이에 發生되는 死亡者數로서 nDx 의 合計는 100,000이 됨.

生存人 年數(nLx)：x 歲에서의 生存者들이 x 歲에서 x+n 歲間 사는 年數의 合計로서, 대략 Lx 의 n 倍 보다 다소 적게 나타남.

總生存人 年數(Tx)：x 歲에서의 生存者들이 모두 死亡할때 까지 經驗하는 總生存者 年數로서 이는 nLx 의 下端으로 부터 合計가 됨.

期待餘命(Ex)：x 歲에 있는 生存者들의 平均 殘餘 生存者數 임.

Ⅶ. 生命表上 나타난 結果 分析

1. 우리나라 平均壽命의 推移

一般的으로 先進國이 過去 經驗한 바에 의하면 平均壽命은 平均壽命이 70歲가 될 때 까지 年間 0.5 歲 씩 늘어나다가, 平均壽命이 70 歲가 넘으면 增加速度가 떨어져 年間 0.25 歲 씩 늘어나는 것으로 알려져 있다. 우리나라의 경우도 이러한 趨勢에 따라 平均壽命이 最初로 推定된 1906−10年의 23.5歲에서 年間 0.57歲 씩 늘어나 1989年에는 70.8歲가 된 것으로 推定되는 것이다(表 1 參照).

2. 年齡別 死亡 패턴 推移

앞에서 살펴본 平均壽命의 增加는 결국 死亡率이 낮아진 結果로 因한 것이다. 우선 死亡率의 低下를 粗死亡率(Crude Death Rate)이라는 指標로 살펴보면, 우리나라의 粗死亡率은 1926−30年에는 人口 千名當 26−30 水準에서 60年代 初에는 10 水準으로, 그리고 1989年에는 6 水準으로 꾸준한 低下를 보이고 있다.

그러나 年齡別로 死亡率을 細分하여 살펴보면, 年齡別로 死亡率의 減少速度가 다르게 나타난다. 즉, 男·女 低年齡層에서의 死亡率은 다른 年齡層에 比해 相對的으로 큰 幅으로 떨어진 反面, 中·長年層 男子의 경우 女子에 비해 相對的으로 死亡率의 減少速度가 느린 것으로 나타나, 우리나라 年齡別 死亡 패턴의 特異性을 보이고 있다.

이를 表 2에서 數值로 보면, 男子의 경우 1989年 40代 以後에서의 死亡率은 1926−30年 同年齡層

Table 1. Trend of Life Expectancy at Birth in Korea

Year	Male	Female	Total	Name of Works
1906－10	22.6	24.4	23.5	Y. Ishi
1911－15	24.0	26.0	25.0	〃
1916－20	25.8	28.2	27.1	〃
1921－25	28.3	30.8	29.6	〃
1926－30	32.4	35.0	33.6	H. Mizushima
1931－35	36.3	38.5	37.1	Y. Ishi
1936－40	40.6	44.7	42.6	〃
1938－42	42.5	45.0	43.8	C. B. Park
1942	42.8	47.1	44.9	Y. Ishi
1955－60	51.1	53.7	52.6	I. H. Kim
1961	54.5	60.6	57.5	〃
1966	59.7	64.1	61.9	NBOS
1970	59.8	66.7	63.2	〃
1978－79	62.7	69.1	65.9	〃
1983	63.8	72.2	67.9	〃
1985	64.9	73.3	69.0	〃
1987	66.0	74.1	69.9	〃
1989	66.9	75.0	70.8	〃

에서 나타난 死亡率의 50 퍼센트 以上을 나타내지만, 女子의 경우는 20 퍼센트 정도만을 보이고 있어 男子는 緩慢하게 女子는 빠른 速度로 死亡率이 減少 하였음을 알 수 있다. 또한 1926－30年에는 出生兒中 1年 以内에 29 퍼센트가 死亡하는 높은 嬰兒死亡率을 보였지만, 1989年에는 出生兒中 불과 1.1 퍼센트만이 出生後 1年 以内에 死亡하는 것으로 나타나 우리나라의 平均壽命을 增加시킴에 있어서 큰 寄與를 하였음을 알 수 있다.

3. 우리나라 死亡패턴의 特徵

이미 많은 論文에서 알려진 바와 같이, 우리나라 死亡패턴의 特徵中 하나는 男子 40歲 以上 年齡層에서의 死亡率이 같은 男子 40歲 未滿의 年齡層뿐만 아니라 같은 女子 40歲 以上의 死亡率과 比較하여 볼 때 상당히 높다는 點을 지적할 수 있다. 이러한 現象은 다른 나라의 現在 또는 過去의 死亡패턴과 比較하여 보더라도 우리나라가 더욱 두드러지게 나타난다.

우리나라에서 이처럼 男·女 40代 以後에서 年齡增加와 함께 死亡率이 急激히 上昇하는 原因은 韓國人의 傳統的인 價値觀, 生活樣式, 保健行態 등과 밀접한 관련이 있는 것으로 알려져 있다. 즉, 傳統的인 家父長 社會에서 우리나라 男子가 겪는 스트레스의 過重, 吸煙, 飮酒習慣 등과 또한 急變하는 經濟社會現象에 적응하기 위한 心的 葛藤 등이 影響을 미치지 않았다고는 할 수 없을 것이다.

또한 우리나라에서 死亡패턴의 特徵中 다른 하나는 男·女間 平均壽命의 差異가 1906－10年에 1.8歲, 1938－42年에 2.5歲에 불과 하였으나, 80年代에 들어와서는 1983年에 8.4歲, 1985年 및 1987年에

Table 2. Comparison of ASDR between 1926－30 and 1989

(unit : per thousand)

Age	Male			Female		
	1926－30	1989	89/(26－30)	1926－30	1989	89/(26－30)
0	288.5	11.5	3.8	260.0	10.6	4.1
1－4	53.6	1.2	2.2	50.1	1.0	2.0
5－9	11.9	0.7	5.9	11.8	0.5	4.2
10－14	6.9	0.5	7.2	6.5	0.4	6.2
15－19	7.2	0.9	12.5	7.4	0.6	18.1
20－24	10.1	1.5	14.9	10.5	0.7	16.7
25－29	11.1	2.0	18.0	10.9	0.9	18.3
30－34	12.7	2.6	20.5	12.5	1.0	28.0
35－39	13.7	3.1	22.6	13.3	1.5	11.3
40－44	12.6	5.6	44.4	11.2	2.2	19.6
45－49	14.5	8.6	59.3	11.9	3.4	28.6
50－54	19.6	12.6	64.3	15.2	4.8	31.6
55－59	26.9	17.6	65.4	20.4	7.4	36.3
60－64	44.0	27.3	62.0	33.6	11.3	33.6
65－69	60.9	45.3	74.4	47.6	20.0	42.0

8.4歲, 그리고 1989年에는 8.1歲로 큰 差異를 보이고 있는 點이다(表 1 參照). 이러한 差異는 世界에서도 가장 높은 差異를 보이고 있는 프랑스(8.1歲), 핀란드(8.1歲) 등과도 비슷한 行態를 따르고 있는 것이다. 一般的으로 男·女間의 平均壽命의 差異는 男·女間의 生物學的, 個別行動的 또는 社會構造的 差異에서 發生하는 것으로 알려져 있다. 特히 우리나라에서 男·女間 平均壽命의 差異가 두드러지는 事由로는 生物學的이나 個人行態論的 要因보다 社會構造的 要因으로 男子 40代 以後에서의 높은 死亡率이 큰 寄與를 하였기 때문인 것으로 사료된다.

4. 40代 以後 男子의 死亡原因構造

40代 以後 男子의 높은 死亡率의 死因構造를 살펴보면, 惡性新生物이 22.5 퍼센트를 차지하여 가장 重要한 役割을 하고 있으며, 그 다음은 腦血管疾患(14.4%), 高血壓性疾患(8.3%), 肝疾患 및 硬變症(7.9%) 및 心臟病(7.7%)의 順으로, 이들 成人病들은 全體死因에 의한 死亡率의 60.8 퍼센트를 차지하고 있는 것으로 나타나고 있다. 이들 疾病과 함께 糖尿病(1.5%) 및 氣管枝肺炎 및 喘息(2.8%)은 個人 行態論的 要因으로서 飮食, 飮酒 및 吸煙 등과 깊게 聯關되어 있다 하겠다(表 3 參照).

한편, 不意의 事故(7.0%)도 6位로서 主要한 死因이 되고 있으며, 結核(3.3%)에 의한 死亡도 높게 나타나, 中年男性이 危險 및 부적당한 環境에의 露出에 의하여 死亡하는 경우도 重要하다 하겠다. 自殺 역시 約 1 퍼센트로 不意의 事故 및 結核과 함께 社會 構造的 要因으로 이들 40代 以後 男性의 높은 死亡力에 寄與하는 것으로 보인다.

이들 死因의 年齡別 構造는 대부분 疾患들이 60歲 前·後 까지 계속 增加하다가 減少하는 趨勢를 보여 이들 死因은 주로 40－60歲 사이의 死亡率을 높이고 있는 것으로 나타나고 있다. 한편 肝疾患 및 硬變症, 不意의 事故, 結核 및 自殺은 年齡增加와 함께 계속 減少하고 있어 주로 40代 초반

Table 3. Death Rate and Proportion by Major Cause of Death for Males, 1989

Cause of Death	40－44	45－49	50－54	55－59	60－64	65－69	70－74	75－79	80＋	40＋
結核(010-018)	26(4.7)	40(4.7)	54(4.3)	73(4.1)	104(3.8)	131(2.9)	162(2.4)	215(1.9)	227(1.0)	(3.3)
惡性新生物(140-018)	114(20.3)	212(24.5)	372(29.6)	568(32.2)	864(31.7)	1,123(24.8)	1,221(17.9)	1,408(12.5)	128(5.6)	(22.5)
糖尿病(250)	8(1.4)	13(1.6)	24(1.9)	37(2.1)	48(1.8)	73(1.6)	82(1.2)	111(1.0)	135(0.6)	(1.5)
高血壓性疾患(401-405)	28(4.9)	61(7.1)	99(7.9)	157(8.9)	287(10.5)	420(9.3)	602(8.8)	959(8.5)	1,650(7.2)	(8.3)
心臟病(393-398, 410-429)	55(9.9)	73(8.4)	104(8.3)	142(8.1)	217(8.0)	297(6.6)	454(6.7)	811(7.2)	1,822(8.0)	(7.7)
腦血管疾患(430-438)	44(7.9)	79(9.1)	142(11.2)	242(13.7)	436(16.0)	779(17.2)	1,179(17.3)	1,936(17.1)	[illegible]71([illegible]6.2)	(14.4)
氣管枝, 肺炎 및 [illegible]*	6(1.2)	13(1.5)	18(1.4)	38(2.1)	70(2.6)	139(3.1)	270(4.0)	500(4.4)	1,079(4.7)	([illegible].8)
[illegible] 및 硬變症(570-573)	88(15.7)	137(15.9)	175(13.9)	198(10.9)	204(7.5)	230(5.1)	192(2.8)	211(1.9)	297(1.3)	(7.9)
不意 事故(E800-E949)	115(20.6)	129(14.9)	134(10.6)	128(7.2)	153(5.6)	177(3.9)	192(2.8)	266(2.4)	339(1.5)	(7.0)
自殺(E950-E959)	15(2.7)	17(2.0)	18(1.4)	15(1.8)	18(1.7)	28(0.6)	30(0.5)	38(0.3)	32(0.1)	(0.9)
其他	61(10.8)	90(10.4)	120(9.5)	171(9.9)	324(11.8)	1,131(24.9)	2,423(35.6)	4,856(42.9)	12,308(53.8)	(23.7)
모든 死亡原因	560(100.0)	864(100.0)	1,260(100.0)	1,763(100.0)	2,725(100.0)	4,528(100.0)	6,807(100.0)	11,311(100.0)	22,889(100.0)	(100.0)

*(446, 490, 491, 480-486)

中年層에서 重要하게 나타나고 있는 反面에, 氣管枝, 肺炎 및 喘息은 계속 增加하여 中年層에서 보다는 老年層에서 더 重要한 死因으로 나타나고 있다.

Ⅶ. 맺는말

以上에서 生命表의 槪念, 活用分野, 基礎資料, 死亡申告資料의 補完過程, 作成節次, 生命表 函數, 結果 등을 살펴 보았다.

이와 같이 作成된 生命表를 기초로 한 우리나라 死亡패턴의 特徵을 살펴본 결과로는 첫째, 男子 40歲 以後에서의 死亡率이 같은 男子 40歲 未滿의 年齡層 뿐만 아니라 女子의 死亡率과 比較하여 볼 때 相對的으로 높다는 點과, 둘째는, 男·女間의 平均壽命이 큰 差異를 보이고 있다는 點, 셋째는, 우리나라의 平均壽命은 20世紀初 이래 年間 0.57歲씩 比較的 빠른 速度로 增加를 하였다는 點을 指摘할 수 있다.

그러나 한가지 未洽한 點은 우리나라의 死亡패턴을 뒷받침해 줄 수 있는 死亡原因分析이 資料의 制約性으로 인하여 試圖되지 못하였다는 點이다. 단지 우리나라의 독특한 死亡패턴은 韓國人의 傳統的인 價値觀, 生活樣式, 保健行態 등과 밀접한 關聯이 있을 것이라는 言及만 되었다. 따라서 向後 우리나라의 독특한 死亡패턴을 구체적으로 뒷받침하여주는 原因分析이 遂行되어야 할 것이다.

그리고 한나라의 死亡패턴을 把握할 수 있는 資料源과 관련하여서는 死亡申告, 死亡標本調査結果, 埋·火葬 許可資料, 病院統計資料, 人口總調査結果를 이용한 間接推定資料, 또는 모델 生命表를 이용한 推定資料 등을 列擧할 수 있다. 그러나 問題는 死亡申告資料에서는 申告의 不振性, 標本調査에서는 標本規模의 過小, 人口總調査에서는 人口數의 漏落 및 重複, 埋·火葬 許可 및 病院統計 資料에서는 資料取合의 어려움, 그리고 모델 生命表 利用時는 假定의 適合性 問題 등 死亡패턴을 正確히 把握함에 있어서 어느것 하나도 完璧하지 못한 實情이다.

또한 資料源과 관련하여 死亡의 特徵을 言及한다면, 一般的으로 死亡이라는 事件은 發生原因이 매우 다양하지만 發生頻度는 극히 적고, 記憶하기 싫거나 隱蔽하려고 하는 傾向이 있고, 調査對象은 이미 存在치 않고, 거의 豫測 可能性이 없이 不規則的으로 發生하기 때문에 계속적인 觀察로서만이 파악이 可能하다는 特徵을 가지고 있다고 볼 수 있다. 이러한 特徵은 우리가 死亡패턴을 分析함에 있어서 標本調査나 間接推定資料 보다는 申告資料를 活用하는 것이 가장 바람직 하다고 할 수 있다.

따라서 우리는 死亡申告를 포함한 人口動態申告가 보다 正確하게 適期內에 이루어지도록 모든 努力을 傾注하여야 할 것이며, 아울러 申告資料를 기초로 한 各種研究가 보다 強化되어야 할 것이다.

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Appendix 1. Trend of ASDR

(per thousand)

Age	Males			Females		
	1970	1979	1989	1970	1979	1989
0	57.46	32.28	11.06	44.66	42.47	10.58
1− 4	4.26	2.29	1.16	3.76	4.32	1.00
5− 9	1.38	1.10	0.71	1.15	0.71	0.54
10−14	1.06	0.87	0.54	0.88	0.52	0.43
15−19	1.80	1.51	0.91	1.42	0.86	0.58
20−24	2.55	2.17	1.48	1.88	1.15	0.74
25−29	2.64	2.44	2.04	2.21	1.17	0.92
30−34	2.97	2.70	2.55	2.64	1.19	1.02
35−39	3.78	3.24	3.05	3.21	1.88	1.53
40−44	7.16	6.34	5.60	4.11	3.25	2.24
45−49	9.86	8.89	8.64	5.65	4.30	3.40
50−54	14.85	13.69	12.60	8.16	6.26	4.84
55−59	23.02	21.74	17.63	11.95	9.45	7.42
60−64	40.00	37.92	27.25	18.67	15.70	11.34
65−69	66.88	63.70	45.28	30.22	26.41	19.95
70−74	96.25	92.00	68.07	49.14	50.59	35.68
75−79	150.97	144.00	113.11	82.32	77.11	60.84
80+	288.19	222.63	228.89	177.41	170.29	142.63

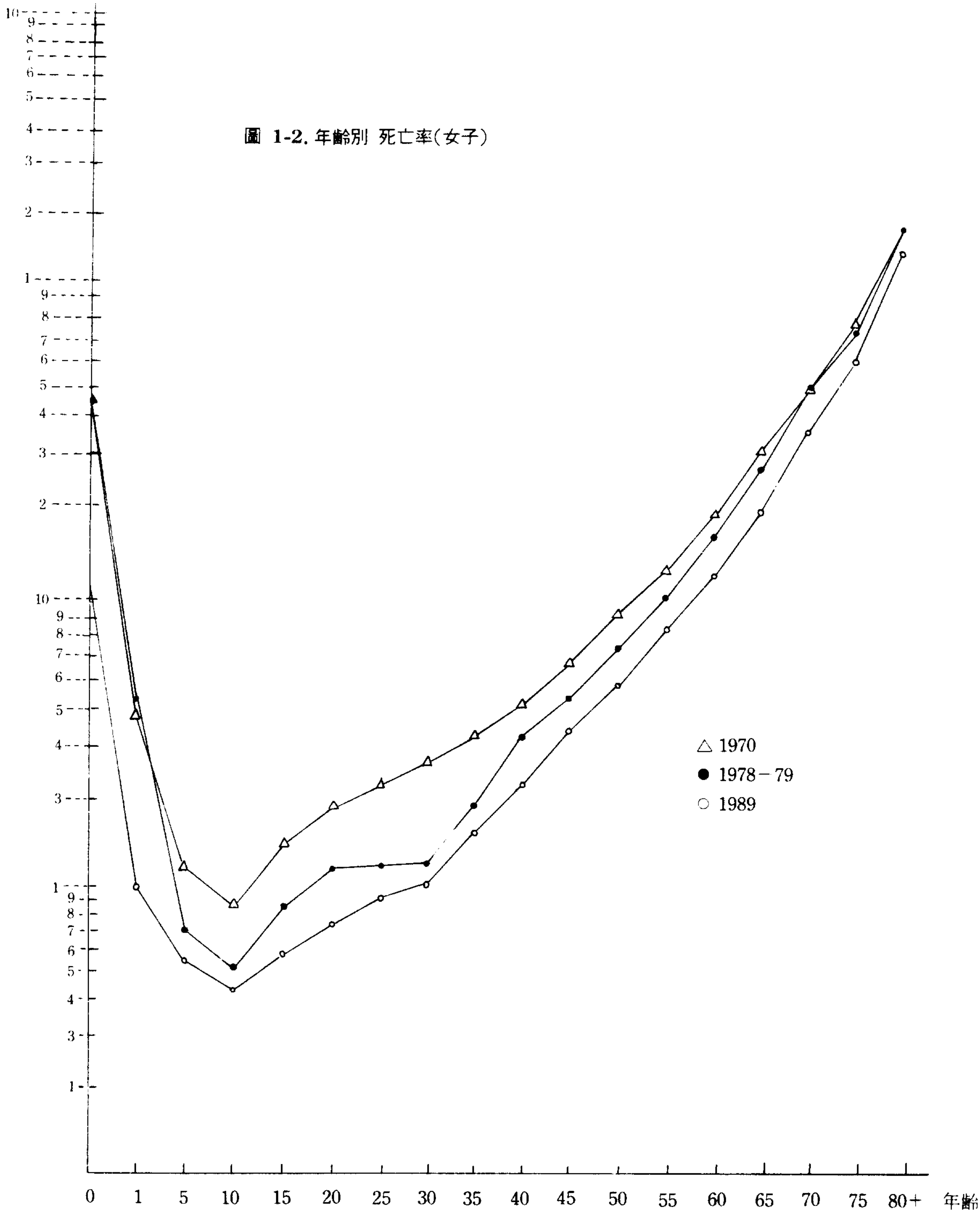


圖 1-2. 年齡別 死亡率(女子)
△ 1970
● 1978－79
○ 1989
0
1
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80+
年齡

Appendix 2. Comparison of ASDR among Major Countries

(per thousand)

Age	Males					Females				
	Japan	Canada	France	Taiwan	Korea	Japan	Canada	France	Taiwan	Korea
0	5.9	8.6	9.9	7.8	14.8	5.1	7.1	7.3	6.9	14.5
1 − 4	0.6	0.5	0.5	1.1	1.6	0.4	0.4	0.4	0.9	1.5
5 − 9	0.3	0.3	0.3	0.5	0.9	0.2	0.2	0.2	0.3	0.8
10 − 14	0.2	0.3	0.3	0.5	0.7	0.1	0.2	0.2	0.3	0.5
15 − 19	0.7	1.0	0.9	1.1	1.3	0.2	0.4	0.4	0.5	0.9
20 − 24	0.8	1.4	1.6	1.5	1.8	0.3	0.4	0.5	0.6	1.0
25 − 29	0.8	1.3	1.6	1.6	2.2	0.4	0.4	0.6	0.7	1.1
30 − 34	0.9	1.4	1.7	1.9	2.9	0.6	0.6	0.7	0.9	1.4
35 − 39	1.3	1.6	2.3	2.7	4.0	0.8	0.8	1.1	1.3	1.8
40 − 44	2.2	2.4	3.4	4.0	7.0	1.2	1.4	1.5	1.8	2.8
45 − 49	3.7	3.9	5.4	5.7	9.9	1.8	2.4	2.2	2.9	3.9
50 − 54	6.2	6.9	8.8	8.3	14.0	2.9	3.8	3.4	4.7	5.8
55 − 59	9.0	11.4	13.8	11.7	20.8	4.1	5.9	5.0	7.4	8.5
60 − 64	13.0	18.1	19.1	18.8	32.0	6.6	9.1	7.2	12.1	13.0
65 − 69	21.5	29.1	32.3	30.5	49.4	11.0	14.6	12.9	20.5	22.3
70 − 74	36.6	45.2	41.1	49.4	76.3	19.9	22.9	18.6	35.1	37.6
75 − 79	64.5	68.1	73.2	78.1	117.6	37.7	38.6	38.0	60.7	62.8
80 − 84	109.0	104.6	123.8	138.8	248.7	72.4	63.6	75.5	125.5	150.8
85 +	190.6	195.6	244.1			152.9	141.6	186.6		

Note : The data refers to the year of 1985.

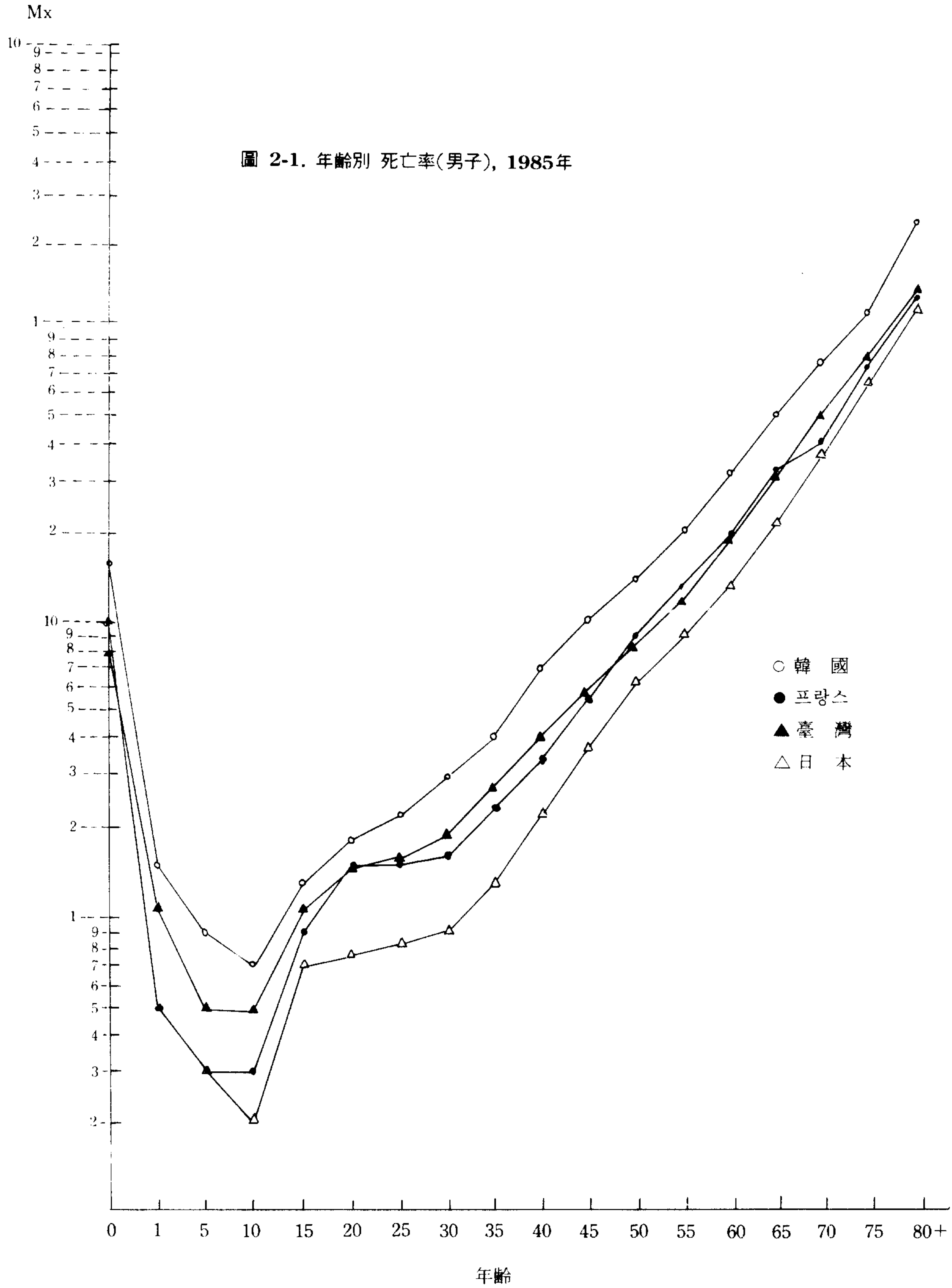
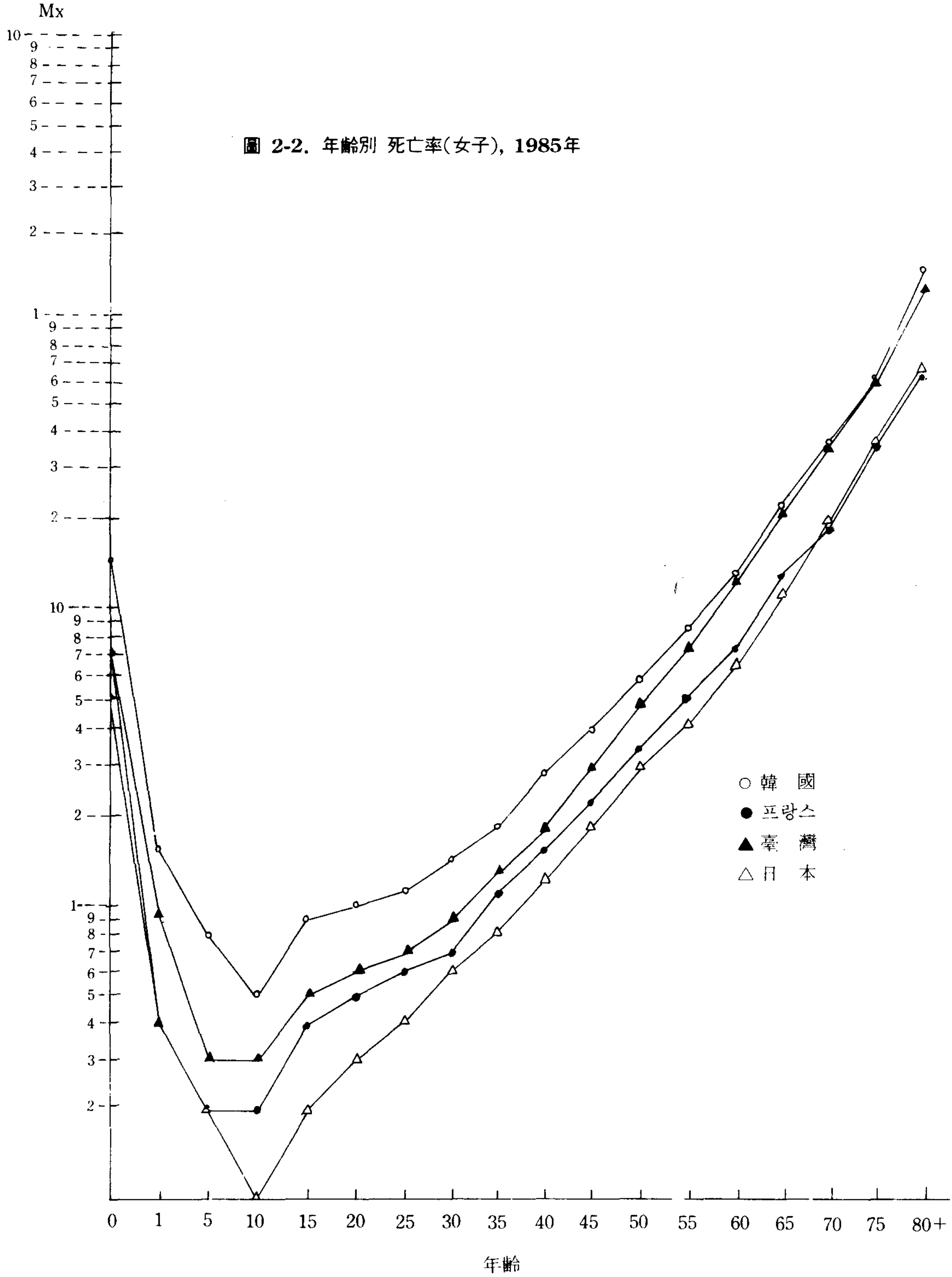


圖 2-1. 年齡別 死亡率(男子), 1985年

圖 2-2. 年齡別 死亡率(女子), 1985年



Appendix 3. Complete Life Table for 1989 : Males

年齢 AGE	死亡率 M(x)	死亡確率 Q(x)	死亡者 D(x)	生存者 I(x)	靜止人口 L(x)	生殘律 S(x)	總生存年數 T(x)	期待餘命 E(x)
0	0.01106	0.01096	1096	100000	99090	0.99720	6692258	66.92
1	0.00156	0.00156	154	98904	98813	0.99882	6593168	66.66
2	0.00114	0.00114	113	98751	98696	0.99894	6494355	65.76
3	0.00099	0.00099	98	98637	98591	0.99905	6395659	64.84
4	0.00093	0.00093	92	98539	98497	0.99915	6297068	63.90
5	0.00081	0.00081	80	98447	98413	0.99923	6198571	62.96
6	0.00074	0.00074	73	98367	98337	0.99929	6100158	62.01
7	0.00069	0.00069	68	98294	98267	0.99934	6001821	61.06
8	0.00064	0.00064	63	98227	98202	0.99938	5903554	60.10
9	0.00061	0.00061	60	98164	98141	0.99941	5805352	59.14
10	0.00059	0.00059	58	98104	98083	0.99941	5707211	58.18
11	0.00059	0.00059	58	98046	98025	0.99941	5609128	57.21
12	0.00060	0.00060	59	97988	97967	0.99939	5511103	56.24
13	0.00063	0.00063	62	97929	97907	0.99936	5413136	55.28
14	0.00066	0.00066	65	97868	97844	0.99933	5315229	54.31
15	0.00071	0.00071	69	97803	97778	0.99926	5217385	53.35
16	0.00079	0.00079	78	97734	97706	0.99915	5119607	52.38
17	0.00091	0.00091	89	97657	97623	0.99903	5021901	51.42
18	0.00104	0.00104	102	97568	97528	0.99889	4924278	50.47
19	0.00115	0.00115	113	97466	97420	0.99880	4826750	49.52
20	0.00124	0.00124	121	97354	97303	0.99873	4729330	48.58
21	0.00134	0.00134	131	97233	97179	0.99859	4632027	47.64
22	0.00147	0.00147	143	97103	97042	0.99846	4534848	46.70
23	0.00160	0.00160	155	96960	96893	0.99834	4437806	45.77
24	0.00172	0.00171	166	96805	96732	0.99823	4340913	44.84
25	0.00182	0.00182	176	96639	96561	0.99814	4244181	43.92
26	0.00192	0.00192	186	96463	96381	0.99802	4147620	43.00
27	0.00203	0.00203	196	96278	96190	0.99792	4051239	42.08
28	0.00214	0.00213	205	96082	95990	0.99781	3955049	41.16
29	0.00224	0.00224	215	95877	95780	0.99770	3859059	40.25
30	0.00234	0.00234	224	95662	95560	0.99762	3763279	39.34
31	0.00242	0.00242	231	95439	95333	0.99753	3667719	38.43
32	0.00249	0.00248	237	95208	95098	0.99750	3572386	37.52
33	0.00256	0.00255	243	94971	94860	0.99740	3477288	36.61
34	0.00266	0.00266	252	94729	94613	0.99728	3382428	35.71
35	0.00278	0.00278	263	94477	94356	0.99716	3287815	34.80
36	0.00302	0.00301	284	94214	94088	0.99681	3193459	33.90
37	0.00333	0.00333	313	93930	93788	0.99653	3099371	33.00
38	0.00364	0.00363	340	93618	93463	0.99620	3005583	32.10
39	0.00398	0.00397	371	93278	93108	0.99585	2912120	31.22

(Appendix 3. Continued)

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
40	0.00437	0.00436	406	92907	92722	0.99542	2819012	30.34
41	0.00489	0.00488	451	92502	92297	0.99483	2726290	29.47
42	0.00552	0.00550	507	92051	91820	0.99416	2633993	28.61
43	0.00618	0.00616	564	91544	91284	0.99351	2542173	27.77
44	0.00680	0.00678	617	90980	90692	0.99292	2450889	26.94
45	0.00738	0.00736	665	90363	90050	0.99236	2360197	26.12
46	0.00800	0.00797	715	89698	89362	0.99170	2270147	25.31
47	0.00868	0.00865	770	88983	88620	0.99191	2180785	24.51
48	0.00939	0.00935	825	88214	87823	0.99030	2092165	23.72
49	0.01016	0.01011	884	87389	86971	0.98948	2004342	22.94
50	0.01098	0.01092	945	86506	86056	0.98867	1917371	22.16
51	0.01175	0.01169	1000	85561	85081	0.98795	1831315	21.40
52	0.01248	0.01241	1049	84561	84056	0.98723	1746234	20.65
53	0.01327	0.01318	1101	83512	82983	0.98639	1662178	19.90
54	0.01428	0.01418	1169	82411	81854	0.98524	1579195	19.16
55	0.01549	0.01537	1249	81242	80646	0.98400	1497341	18.43
56	0.01669	0.01656	1325	79993	79356	0.98287	1416695	17.71
57	0.01787	0.01771	1394	78669	77997	0.98169	1337339	17.00
58	0.01919	0.01902	1470	77275	76569	0.98027	1259342	16.30
59	0.02068	0.02047	1552	75806	75058	0.97878	1182773	15.60
60	0.02245	0.02221	1650	74254	73465	0.97678	1107715	14.92
61	0.02482	0.02453	1781	72604	71759	0.97414	1034250	14.25
62	0.02777	0.02741	1941	70823	69903	0.97102	962491	13.59
63	0.03100	0.03054	2104	68882	67877	0.96785	892588	12.96
64	0.03401	0.03345	2234	66778	65695	0.96520	824711	12.35
65	0.03680	0.03615	2334	64544	63409	0.96245	759016	11.76
66	0.04010	0.03934	2448	62211	61028	0.95881	695607	11.18
67	0.04415	0.04323	2584	59763	58514	0.95466	634579	10.62
68	0.04856	0.04744	2713	57180	55861	0.95038	576065	10.07
69	0.05311	0.05177	2820	54467	53089	0.94600	520204	9.55
70	0.05780	0.05621	2903	51648	50222	0.94148	467115	9.04
71	0.06274	0.06086	2967	48745	47283	0.93668	416893	8.55
72	0.06811	0.06589	3017	45778	44289	0.93138	369610	8.07
73	0.07418	0.07156	3060	42762	41250	0.92531	325321	7.61
74	0.08128	0.07815	3103	39702	38169	0.91815	284071	7.16
75	0.08977	0.08596	3146	36599	35045	0.90960	245902	6.72
76	0.10006	0.09534	3190	33453	31877	0.89927	210857	6.30
77	0.11282	0.10686	3234	30264	28666	0.88638	178980	5.91
78	0.12911	0.12137	3281	27030	25409	0.86997	150314	5.56
79	0.14576	0.13567	3222	23749	22105	0.82303	124905	5.26
80	0.22889	1.00000	20527	20527	102800	0.00000	102800	5.01

Appendix 4. Completed Life Table for 1989 : Females

AGE	M(x)	Q(x)	D(x)	l(x)	L(x)	S(x)	T(x)	E(x)
0	0.01058	0.01049	1049	100000	99130	0.99741	7496349	74.96
1	0.00128	0.00128	127	98951	98873	0.99905	7397219	74.76
2	0.00089	0.00089	88	98824	98779	0.99913	7298346	73.85
3	0.00083	0.00083	82	98736	98693	0.99919	7199567	72.92
4	0.00077	0.00077	76	98654	98613	0.99927	7100874	71.98
5	0.00070	0.00069	69	98578	98541	0.99934	7002261	71.03
6	0.00062	0.00062	62	98510	98476	0.99941	6903720	70.08
7	0.00056	0.00056	56	98448	98418	0.99946	6805244	69.13
8	0.00051	0.00051	51	98393	98365	0.99951	6706826	68.16
9	0.00047	0.00047	46	98342	98317	0.99955	6608461	67.20
10	0.00044	0.00044	43	98296	98273	0.99957	6510144	66.23
11	0.00044	0.00044	43	98253	98231	0.99955	6411871	65.26
12	0.00046	0.00046	45	98210	98187	0.99953	6313640	64.29
13	0.00048	0.00048	47	98165	98141	0.99951	6215453	63.32
14	0.00049	0.00049	48	98118	98093	0.99951	6117312	62.35
15	0.00050	0.00050	49	98070	98045	0.99949	6019219	61.38
16	0.00053	0.00053	52	98021	97995	0.99946	5921174	60.41
17	0.00057	0.00057	56	97970	97942	0.99941	5823179	59.44
18	0.00061	0.00061	60	97914	97884	0.99937	5725237	58.47
19	0.00065	0.00065	64	97854	97822	0.99934	5627353	57.51
20	0.00068	0.00067	66	97791	97757	0.99931	5529531	56.54
21	0.00071	0.00071	69	97725	97690	0.99927	5431774	55.58
22	0.00075	0.00075	73	97656	97619	0.99923	5334084	54.62
23	0.00079	0.00079	77	97583	97544	0.00019	5236465	53.66
24	0.00083	0.00083	81	97506	97465	0.99916	5138921	52.70
25	0.00086	0.00086	84	97425	97383	0.99912	5041456	51.75
26	0.00088	0.00088	86	97341	97297	0.99912	4944073	50.79
27	0.00088	0.00088	86	97255	97211	0.99912	4846776	49.84
28	0.00089	0.00089	87	97169	97125	0.99910	4749565	48.88
29	0.00093	0.00093	90	97083	97038	0.99904	4652440	47.92
30	0.00099	0.00098	96	96993	96945	0.99899	4555402	46.97
31	0.00103	0.00103	100	96897	96847	0.99895	4458457	46.01
32	0.00107	0.00107	104	96797	96747	0.99890	4361610	45.06
33	0.00113	0.00113	109	96693	96639	0.99884	4264865	44.11
34	0.00120	0.00120	116	96584	96527	0.99876	4168226	43.16
35	0.00129	0.00129	125	96468	96407	0.99866	4071699	42.21
36	0.00140	0.00140	135	96344	96278	0.99855	3975292	41.26
37	0.00152	0.00152	146	96209	96138	0.99842	3879014	40.32
38	0.00165	0.00164	158	96063	95986	0.99829	3782876	39.38
39	0.00178	0.00178	171	95905	95822	0.99814	3686890	38.44

(Appendix 4. Continued)

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
40	0.00194	0.00194	186	95734	95644	0.99798	3591068	37.51
41	0.00211	0.00210	201	95549	95451	0.99781	3495424	36.58
42	0.00228	0.00228	218	95348	95242	0.99763	3399973	35.66
43	0.00247	0.00247	235	95130	95016	0.99713	3304731	34.74
44	0.00269	0.00268	255	94895	94772	0.99720	3209715	33.82
45	0.00292	0.00292	276	94641	94507	0.99696	3114943	32.91
46	0.00315	0.00314	297	94365	94220	0.99675	3020436	32.01
47	0.00336	0.00336	316	94068	93914	0.99653	2926216	31.11
48	0.00360	0.00359	337	93752	93588	0.99628	2832302	30.21
49	0.00389	0.00389	363	93415	93240	0.99595	2738714	29.32
50	0.00424	0.00423	394	93052	92862	0.99558	2645474	28.43
51	0.00459	0.00458	425	92658	92452	0.99525	2552612	27.55
52	0.00493	0.00492	454	92234	92013	0.99491	2460160	26.67
53	0.00530	0.00529	486	91780	91545	0.99451	2368147	25.80
54	0.00579	0.00577	527	91295	91042	0.99395	2276602	24.94
55	0.00636	0.00634	576	90768	90491	0.99337	2185560	24.08
56	0.00688	0.00686	619	90192	89891	0.99291	2095069	23.23
57	0.00734	0.00732	656	89574	89254	0.99245	2005178	22.39
58	0.00788	0.00785	698	88918	88580	0.99185	1915924	21.55
59	0.00864	0.00861	760	88220	87858	0.99093	1827344	20.71
60	0.00964	0.00959	839	87461	87061	0.98988	1739486	19.89
61	0.01065	0.01060	918	86622	86180	0.98892	1652425	19.08
62	0.01165	0.01159	993	85704	85225	0.98790	1566245	18.28
63	0.01280	0.01272	1078	84711	84194	0.98665	1481020	17.48
64	0.01416	0.01406	1176	83633	83070	0.98522	1396826	16.70
65	0.01580	0.01568	1293	82457	81842	0.98341	1313756	15.93
66	0.01784	0.01769	1436	81164	80484	0.98120	1231914	15.18
67	0.02025	0.02006	1600	79729	78971	0.97865	1151430	14.44
68	0.02293	0.02268	1772	78129	77285	0.97596	1072459	13.73
69	0.02570	0.02539	1939	76357	75427	0.97323	995174	13.03
70	0.02857	0.02819	2098	74419	73408	0.97036	919747	12.36
71	0.03163	0.03115	2253	72321	71232	0.96729	846339	11.70
72	0.03498	0.03440	2411	70068	68902	0.96385	775107	11.06
73	0.03881	0.03810	2578	67658	66411	0.95989	706205	10.44
74	0.04325	0.04236	2757	65080	63747	0.95529	639794	9.83
75	0.04846	0.04735	2951	62323	60897	0.94988	576047	9.24
76	0.05464	0.05323	3161	59372	57845	0.94349	515150	8.68
77	0.06204	0.06024	3386	56212	54576	0.93581	457305	8.14
78	0.07101	0.06865	3627	52826	51073	0.92658	402729	7.62
79	0.06585	0.06333	3116	49199	47323	0.86543	351656	7.15
80	0.14263	1.00000	46083	46083	304333	0.00000	304333	6.60

Appendix 5. Abridged Life Table for 1989

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
Male								
0	0.01106	0.01096	1096	100000	99090	0.98709	6692085	66.92
1	0.00116	0.00463	458	98904	394454	0.99557	6592995	66.66
5	0.00071	0.00354	349	98446	491360	0.99688	6198541	62.96
10	0.00054	0.00270	265	98098	489827	0.99638	5707181	58.18
15	0.00091	0.00454	444	97833	488055	099405	5217354	53.33
20	0.000148	0.00737	718	97389	485150	0.99124	4729298	48.56
25	0.00204	0.01015	981	96671	480902	0.98860	4244148	43.90
30	0.00255	0.01267	1212	95690	475419	0.98611	3763246	39.33
35	0.00305	0.01513	1430	94478	468813	0.97867	3287827	34.80
40	0.00560	0.02761	2569	93048	458815	0.96515	2819014	30.30
45	0.00864	0.04229	3826	90478	442827	0.94852	2360199	26.09
50	0.01260	0.06108	5292	86652	420031	0.92762	1917372	22.13
55	0.01763	0.08443	6869	81360	389627	0.89496	1497341	18.40
60	0.02725	0.12756	9502	74491	348699	0.83711	1107714	14.87
65	0.04528	0.20338	13217	64989	291901	0.75784	759015	11.68
70	0.06807	0.29085	15058	51772	221213	0.64690	467115	9.02
75	0.11311	0.44088	16186	36714	143102	0.41805	245902	6.70
80	0.22889	1.00000	20527	20527	102800	0.00000	102800	5.01
Female								
0	0.01058	0.01049	1049	100000	99130	0.98786	7496194	74.96
1	0.00100	0.00399	395	98951	394802	0.99633	7397065	74.75
5	0.00054	0.00270	266	98556	492118	0.99758	7002263	71.05
10	0.00043	0.00215	211	98291	490926	0.99748	6510145	66.23
15	0.00058	0.00290	284	98080	489688	0.99671	6019220	61.37
20	0.00074	0.00369	361	97796	488075	0.99586	5529532	56.54
25	0.00092	0.00459	447	97434	486054	0.99516	5041457	51.74
30	0.00102	0.00509	493	96987	483703	0.99365	4555403	46.97
35	0.00153	0.00762	735	96494	480631	0.99063	4071700	42.20
40	0.00224	0.01114	1067	95758	476126	0.98602	3591070	37.50
45	0.00340	0.01686	1596	94692	469469	0.97965	3114944	32.90
50	0.00484	0.02391	2226	93096	459914	0.96991	2645474	28.42
55	0.00742	0.03642	3310	90870	446074	0.95439	2185561	24.05
60	0.01134	0.05514	4828	87560	425730	0.92549	1739487	19.87
65	0.01995	0.09501	7860	82732	394009	0.87231	1313757	15.88
70	0.03568	0.16379	12263	74872	343700	0.79056	919747	12.28
75	0.06084	0.26404	16531	62608	271714	0.52831	576047	9.20
80	0.14263	1.00000	46077	46077	304333	0.00000	304333	6.60

Appendix 6. Abridged Life Table for 1987

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
Male								
0	0.01250	0.01237	1237	100000	98973	0.98525	6594867	65.95
1	0.00140	0.00558	551	98763	393652	0.99473	6495894	65.77
5	0.00084	0.00419	412	98212	490030	0.99636	6102242	62.13
10	0.00062	0.00310	303	97800	488244	0.99579	5612213	57.38
15	0.00107	0.00534	520	97497	486186	0.99328	5123969	52.55
20	0.00163	0.00812	787	96977	482918	0.99063	4637783	47.82
25	0.00214	0.01064	1024	96190	478391	0.98803	4154865	43.19
30	0.00268	0.01331	1267	95166	472664	0.98488	3676474	38.63
35	0.00342	0.01696	1592	93900	465517	0.97641	3203810	34.12
40	0.00616	0.03033	2800	92307	454537	0.96230	2738292	29.66
45	0.00927	0.04530	4055	89507	437401	0.94509	2283755	25.51
50	0.01343	0.06497	5552	85453	413385	0.92210	1846354	21.61
55	0.01923	0.09174	7330	79901	381180	0.88644	1432970	17.93
60	0.02955	0.13757	9985	72571	337893	0.82754	1051790	14.49
65	0.04765	0.21289	13324	62586	279621	0.74646	713897	11.41
70	0.07203	0.30519	15034	49262	208725	0.63634	434276	8.82
75	0.11540	0.44781	15327	34228	132820	0.4113	225550	6.59
80	0.23849	1.00000	18900	18900	92730	0.0000	92730	4.91
Female								
0	0.01200	0.01188	1188	100000	99014	0.98602	7413913	74.14
1	0.00125	0.00498	492	98812	393996	0.99549	7314900	74.03
5	0.00066	0.00329	324	98319	490787	0.99713	6920903	70.39
10	0.00049	0.00245	240	97995	489378	0.99703	6430116	65.62
15	0.00070	0.00349	342	97756	487924	0.99606	5940739	60.77
20	0.00088	0.00439	428	97414	486001	0.99526	5452814	55.98
25	0.00102	0.00509	493	96986	483699	0.99452	4966813	51.21
30	0.00118	0.00588	568	96493	481046	0.99286	4483115	46.46
35	0.00169	0.00841	807	95925	477609	0.98964	4002069	41.72
40	0.00248	0.01232	1172	95118	472661	0.98474	3524460	37.05
45	0.00368	0.01823	1713	93946	465448	0.97777	3051799	32.48
50	0.00533	0.02630	2426	92233	455102	0.96745	2586351	28.04
55	0.00795	0.03898	3500	89807	440287	0.95107	2131249	23.73
60	0.01222	0.05929	5117	86307	418743	0.92094	1690962	19.59
65	0.02107	0.10008	8125	81190	385637	086726	1272219	15.67
70	0.03693	0.16904	12351	73065	334446	0.78621	886582	12.13
75	0.06180	0.26765	16250	60714	262944	0.52377	552135	9.09
80	0.14663	1.00000	44464	44464	289192	0.00000	289192	6.50

Appendix 7. Abridged Life Table for 1989

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
Male								
0	0.01484	0.01466	1466	100000	98783	0.98257	6491973	64.92
1	0.00164	0.00653	644	98534	392501	0.99396	6393190	64.88
5	0.00093	0.00464	454	97890	488316	0.99601	6000689	61.30
10	0.00067	0.00334	326	97436	486366	0.99512	5512372	56.57
15	0.00129	0.00643	624	97110	483991	0.99221	5026006	51.76
20	0.00184	0.00916	884	96486	480221	0.98991	4542015	47.07
25	0.00222	0.01104	1055	95602	475374	0.98746	4061794	42.49
30	0.00283	0.01405	1328	94547	469414	0.98300	3586420	37.93
35	0.00404	0.02000	1864	93219	461433	0.97297	3117006	33.44
40	0.00696	0.03420	3125	91354	448960	0.095894	2655573	29.07
45	0.00987	0.04816	4249	88230	430525	0.94239	2206613	25.01
50	0.01398	0.06754	5672	83980	405722	0.91741	1776088	21.15
55	0.02077	0.09872	7731	78308	372215	0.87781	1370366	17.50
60	0.03202	0.14823	10462	70577	326733	0.81888	998151	14.14
65	0.04937	0.21973	13209	60116	267555	0.73617	671419	11.17
70	0.07629	0.32035	15026	46906	196965	0.62543	403864	8.61
75	0.11758	0.45435	14484	31880	123188	0.40460	206898	6.49
80	0.24870	1.00000	17395	17395	83710	0.00000	83710	4.81
Female								
0	0.01452	0.01435	1435	100000	98809	0.98319	7332525	73.33
1	0.00148	0.00590	581	98565	392785	0.99466	7233716	73.39
5	0.00078	0.00389	381	97984	488966	0.99678	6840932	69.82
10	0.00051	0.00255	249	97603	487391	0.99661	6351965	65.08
15	0.00085	0.00424	413	97354	485738	0.99539	5864574	60.24
20	0.00100	0.00499	483	96941	483497	0.99481	5378836	55.49
25	0.00108	0.00539	519	96458	480989	0.99395	4895339	50.75
30	0.00135	0.00673	645	95938	478077	0.99228	4414350	46.01
35	0.00175	0.00871	830	95293	474388	0.98868	3936272	41.31
40	0.00281	0.01395	1318	94463	469018	0.98331	3461884	36.65
45	0.00393	0.01946	1812	93145	461192	0.97614	2992866	32.13
50	0.00575	0.02834	2589	91332	450189	0.96521	2531674	27.72
55	0.00846	0.04142	3676	88744	434528	0.94808	2081485	23.46
60	0.01298	0.06286	5347	85067	411969	0.91654	1646957	19.36
65	0.02226	0.10543	8405	79720	377588	0.86329	1234988	15.49
70	0.03756	0.17168	12243	71315	325967	0.78318	857400	12.02
75	0.06278	0.27132	16027	59072	255291	0.51962	531434	9.00
80	0.15081	1.00000	43045	43045	276143	0.00000	276143	6.42

Appendix 8. Abridged Life Table for 1989

AGE	M(x)	Q(x)	D(x)	I(x)	L(x)	S(x)	T(x)	E(x)
Male								
0	0.01600	0.01579	1579	100000	98689	0.98071	6383649	63.84
1	0.00203	0.00808	795	98421	391664	0.99256	6284960	63.86
5	0.00117	0.00583	569	97626	486706	0.99504	5893295	60.37
10	0.00082	0.00409	397	97056	484289	0.99430	5406589	55.71
15	0.00147	0.00732	708	96659	481527	0.99139	4922300	50.92
20	0.00199	0.00990	950	95951	477382	0.98921	4440773	46.28
25	0.00235	0.01168	1110	95001	472233	0.98685	3963390	41.72
30	0.00295	0.01464	1375	93892	466022	0.98202	3491157	37.18
35	0.00432	0.02137	1977	92517	457642	0.97111	3025136	32.70
40	0.00745	0.03657	3311	90540	444422	0.95588	2567493	28.36
45	0.01067	0.05196	4533	87229	424813	0.93756	2123071	24.34
50	0.01526	0.07350	6078	82696	398287	0.90981	1698258	20.54
55	0.02288	0.10821	8291	76618	362365	0.86742	1299971	16.97
60	0.03476	0.15990	10926	68328	314323	0.80666	937606	13.72
65	0.05278	0.23314	13382	57402	253552	0.72240	623283	10.86
70	0.08065	0.33559	14772	44019	183165	0.61399	369731	8.40
75	0.12012	0.46189	13509	29247	112462	0.39720	186566	6.38
80	0.25892	1.00000	15738	15738	74104	0.00000	74104	4.71
Female								
0	0.01551	0.01531	1531	100000	98729	0.98129	7223867	72.24
1	0.00197	0.00784	772	98469	391914	0.99319	7125138	72.36
5	0.00097	0.00484	473	97697	487302	0.99596	6733224	68.92
10	0.00065	0.00324	315	97224	485331	0.99586	6245922	64.24
15	0.00101	0.00504	488	96908	483322	0.99439	5760591	59.44
20	0.00124	0.00618	596	96420	480612	0.99374	5277269	54.73
25	0.00127	0.00633	607	95824	477606	0.99293	4796657	50.06
30	0.00157	0.00782	745	95218	474228	0.99095	4319052	45.36
35	0.00207	0.01030	973	94473	469935	0.98732	3844824	40.70
40	0.00304	0.01509	1410	93501	463976	0.98180	3374890	36.09
45	0.00432	0.02137	1968	92090	455530	0.97345	2910913	31.61
50	0.00647	0.03184	2869	90122	443438	0.96189	2455383	27.25
55	0.00912	0.04458	3890	87253	426540	0.94370	2011945	23.06
60	0.01420	0.06857	5716	83363	402526	0.91096	1585404	19.02
65	0.02351	0.11102	8621	77647	366684	0.85648	1182879	15.23
70	0.03958	0.18008	12430	69026	314056	0.77715	816195	11.82
75	0.06377	0.27501	15564	56596	244070	0.51394	502138	8.87
80	0.15498	1.00000	41032	41032	258069	0.00000	258069	6.29

《Summary in English》

Life Table Construction Based on the Recent Vital Registration Data

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Life tables of Korean population for years 1983, 1985, 1987 and 1989 were constructed by the National Bureau of Statistics. The age specific death rates were calculated from the death registration for numerators and the estimated population by age and sex for denominators.

In the course of constructing life tables, we have made some adjustments for deficiencies in registration data as follows.

First, the non-registered portion of infant deaths especially for neo-natal deaths was estimated and added to the original data. The main reason is that deaths occurring in the neo-natal period and prior to the registration of birth leave little incentive for the registration of either the birth or the death.

Second, the delayed portion of deaths registering after one year of occurrence was estimated and added to the original data.

Third, the portion having inaccuracies in age reporting was also estimated.

Fourth, the moving average method was finally employed in an effort to remove the random error.

The major findings are as follows. 1 the average life expectancy at birth in 1989 is calculated as 70.8 years in 1989, 2 a gap between the male and female life expectancies is widened to more than 8 years form 1.8 years in 1906－10. It means that the female life expectancy has increased substantially, 3 the death rates of the middle - aged men starting age 40 are found to be relatively higher than those of females and younger age groups. This peculiar pattern was also found with the comparison of those of other countries.

韓國人口學會誌 第十三卷 第一號 (1990)
The Journal of The Population Association of Korea, Vol. 13, No. 1 (1990)

Elderly Distribution and Demographic Processes

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《Contents》

I. Introduction

A major consequence of the worldwide decline in mortality is an increase in the number of people surviving to old age. Our demographic interest in the older population comes from the fact that as the number and proportion of older people increase, changes are to be made in the organization of society. Legal, political, education, familial, and economic institutions all undergo change as aging introduces both biological and social changes in the lives of individuals.

Although social age and chronological age rarely seem to coincide, it has become customary to define an old person as one who is 65 or older. In Korea the older population currently numbers 1.5 million, and expects about 3 million in 2000. As a fraction of the total population, the elderly accounted for 3.8 percent in 1980, and will account for 5.9 percent in 2000. Bear in mind, however, that this percentage varies considerably from one part of the nation to another. For example, in 1980 only 2.5 percent of the total population of Seoul are elderly ; yet 5.3 percent of Chungbug's population aged 65 and older. Furthermore, various sociodemographic indices of age structure such as median age, aging index, and aged dependency ratio are significantly different among areas by level of urbanization (Kong and Kim, 1988).

It is well-known that the proportion of a nation's population 65 and over is influenced more by the birth rate than anything else (U. N., 1973 ; Siegel, 1980).[1] A low birth rate elevates the relative proportion of older people, whereas a high birth rate lowers the proportion. Nonetheless, mortality also has some inf-

1) There is a difference between the aging of individuals and the aging of populations (Friedlander and Malul, 1983). Increasing individual longevity is caused by declines in death rates, but increasing age of population is primarily caused by declines in birth rates.

luence on the proportion of elderly. Laypeople generally believe that a low death rate elevates the relative proportion of older people, whereas a high death rate lowers the proportion. However, the effect of mortality on the proportion of elderly is not simple. An equal change in survivorship rates for all age categories would have no impact on the age composition of the population. But, during demographic transitions, survivorship generally improves more at the youngest ages. It would mean that younger birth cohorts would swell by a greater percentage than would older cohorts; thus the shape of the pyramid would be made broader at the bottom after the mortality decline (Shyrock and Siegel, 1975). In short, the declines in mortality that have accompanied demographic transitions have not been a cause of the aging of populations. Recent postdemographic - transition declines in mortality may have an age pattern in which the age of the surviving population does increase slightly (Stolnitz, 1982; Friedlander and Malul, 1983). That is, if youthful and middle - age death rates are already low, then future decreases are likely to focus on postmiddle - age rates, and declines in those will improve survivorship of elderly.

The internal migration effect on the regional variation of the relative proportion of the elderly has far more significance. Because migration is age selective and associated especially with different stages in the life cycle, young adults and their young offspring are the most likely to move. Thus, areas receiving large numbers of migrants are likely to increase the pool of young persons; areas experiencing out - migration tend to have older populations. At the same time, the young can be expected to migrate to urban areas with extensive and varied job opportunities, while such concerns play less of a role in elderly migration (Cebula, 1979 ; Lichter et al., 1979 ; Heaton et al., 1981). In addition, massive rural - to - urban migration in less developed countries has been the major demographic cause of urbanization and it continues to be so.

Yet, previous research has paid little attention to possible changes in the sociodemographic composition of areas affected by these patterns of population redistribution. One such concern is the extent to which the young and the elderly have participated in population shifts, and the attendant changes in the relative proportion of the aged. Although relative immobility of elderly has diminished potential impact of elderly migration on places of destination and origin both, elderly migration is becoming significant in more developed countries (Graff and Wiseman, 1978 ; Serow, 1978 ; Golant, 1979 ; Fuguitt and Tordella, 1980 ; Rogers, 1988). Hence, it is worthwhile to investigate the role of elderly migration in explaining interregional variation and change of the relative proportion of the elderly in Korea.

The purpose of this study is to examine recent changes in the relative proportion of elderly population by region in Korea, giving particular attention to the demographic processes involved in these changes. As mentioned above, the mortality effect on the relative size of the elderly depends on the age differential mortality reduction. In order to deal with this problem, birth and death are integrated into the concept of natural increase of the elderly and the young. Thus, this study analyzes demographic processes of net migration and natural increase of those aged 0 to 64 and 65 or older.

II. Data and Methods

The population data base is derived from the 1975 Population and Housing Census Report (Complete Enumeration) Vol. 1, Whole Country, the 1980 Population and Housing Census Report Vol. 1, Whole Country, and the 1985 Population and Housing Census Report Vol. 1., Whole Country. The fertility and mortality data base is derived from the 1985 Vital Statistics (based on Vital Registration) and the 1986 Vital Statistics. The migration data base is compiled from the 1980 Population and Housing Census Report (15 percent Sample Survey), Vol. 2, Migration, and the 1985 Population and Housing Report Vol. 4, Internal Migration.

The old population is defined as those aged 65 and older, while the young is persons less than 65. The proportion of the elderly is the percentage of the elderly divided by whole population. The demographic processes involved in the change of elderly population over a fixed time period include not only elderly net migration and natural increase but also net migration and natural increase of the young (Lichter et al., 1981). Old net migration is the number of elderly moving into an area minus the elderly number moving out during the interval. Natural increase of the aged refers to the cohorts attaining the age of 65 minus those elderly who die during the time interval. Similarly, young net migration is the number of aged less than 65 moving into an area minus those moving out. Natural increase of the young is the number of born during the time period minus those who die or exit by aging to the elderly category.

For the comparison of regional variation, natural increase rate and annual net migration rate for the elderly and the young are calculated as follows :

$$R_e^n = \frac{P_{65} - D_e}{P_e} \times 100$$

$$R_y^n = \frac{B - D_y - P_{65}}{P_y} \times 100$$

where,

R_e^n = the natural increase rate of the elderly,

R_y^n = the natural increase rate of the young,

P_e = population of the elderly,

P_y = population of the young,

D_e = deaths of the elderly,

D_y = deaths of the young,

B = live births,

P_{65} = population of those aged 65.

$$R_m = \frac{N}{K(1/2)(P_1 + P_2)} \times 100$$

where,

R_m = annual rate of net migration,

P_1 = population at the beginning of the time interval,

P_2 = population at the ending of the time interval,

K = the time interval.

The net migration and natural increase of the old and those of the young have inverse effects on the proportion of the elderly. Net in - migration of the old increases the percentage of the elderly, whereas net in - migration of the young decreases this percentage. The greater the natural increase of the old during a given time interval, the greater the percentage of persons aged 65 and over at the end of the period. In contrast, the greater the natural increase of the young, the lower the percentage of the elderly at the end of the period.

The unit of analysis is province and equivalent large city. In case of Incheon and Daegu, however, separate data is available for 1985 only so that Incheon and Daegu are corporated into Gyeonggie and Kyeongbug respectively to provide comparability across time periods.[2)]

III. Results

Table 1 presents not only the percentage of those aged 65 and over by region for 1975, 1980, and 1985 but also its changes over the time interval. Seoul, Pusan, and Gyeonggie show lower percentage of the elderly than any other regions consistently. For the periods considered, all areas (except Jeju for 1975−80) have experienced increase of the percentage of the elderly, albeit the extent of the increase varies by region. During the two periods, Seoul, Pusan, and Gyeonggie tend to show lower increase of the percentage of the elderly than any other areas.

As presented in Table 2, almost all areas have experienced positive natural increase of both the old and the young for three years, although the extent of the increase varies across regions. Jeonnam, however, has experienced negative natural increase of the elderly for 1975 and 1980. For the changes bet-

Table 1. The Percentage of the Elderly and its Change by Region, 1975−1985

	Percentage			Change	
	1975	1980	1985	1975−1980	1980−1985
Seoul	2.11	2.49	2.91	0.38	0.42
Pusan	2.00	2.25	2.61	0.25	0.36
Gyeonggie	3.26	3.55	3.88	0.29	0.33
Gangweon	3.39	4.21	5.13	0.82	0.92
Chungbug	4.34	5.27	6.11	0.93	0.84
Chungnam	4.13	4.86	5.47	0.73	0.61
Jeonbug	4.18	4.89	5.82	0.71	0.93
Jeonnam	4.43	4.97	5.43	0.54	0.46
Kyeongbug	3.91	4.52	5.34	0.36	0.82
Kyeongnam	4.27	4.54	4.99	0.27	0.45
Jeju	5.29	5.12	5.21	−0.17	0.09

2) When Incheon and Daegu are analyzed as a separate category, their demographic experiences are similar with those of Seoul and Pusan in most cases of this study, So, we could roughly oversimplify the findings of Seoul and Pusan for the general information on Incheon and Daegu.

Table 2. Regional Natural Increase Rate and its Change for the Elderly and the Young, 1975−1985

	Natural Increase Rate						Change			
	1975		1980		1985		1975−1980		1975−1980	
	Elderly	Young	Elderly	Young	Elderly	Young	Elderly	Young	Elderly	Young
Seoul	6.85	1.75	4.77	1.93	5.10	1.13	−2.08	0.18	0.33	−0.80
Pusan	5.05	1.67	3.69	2.08	5.10	1.10	−1.36	0.41	1.41	−0.98
Gyeonggie	4.29	1.41	3.53	1.65	4.19	1.14	−0.78	0.24	0.66	−0.51
Gangweon	2.65	1.54	1.87	1.21	2.83	0.56	−0.76	−0.33	0.96	−0.65
Chungbug	2.60	1.32	1.23	1.18	0.96	0.56	−1.37	−0.14	−0.27	−0.62
Chungnam	3.50	1.80	2.12	1.27	2.91	0.53	−1.38	−0.53	0.79	−0.74
Jeonbug	2.57	1.51	0.68	1.40	3.12	0.32	−1.89	−0.11	2.44	−1.08
Jeonnam	−0.16	1.85	−2.16	1.76	1.84	0.34	−2.00	−0.09	4.00	−1.42
Kyeongbug	3.19	1.68	1.33	1.43	2.93	0.57	−1.86	−0.25	1.60	−0.86
Kyeongnam	1.70	2.01	0.80	1.57	3.26	0.80	−0.90	−0.44	2.46	−0.77
Jeju	4.40	1.87	0.12	2.07	2.17	0.45	−4.28	0.20	2.05	−1.62

ween 1975 and 1980, the natural increase rate of the elderly decreased for all areas, whereas that of the young decreased in such areas as Gangweon, Chungbug, Chungnam, Jeonbug, Kyeongbug, and Kyeongnam. For the changes of the period 1980−1985, the natural increase rate of the young decreased in all areas, whereas that of the old increased in most areas except Chungbug. Table A and B in Appendix present precise information on birth and death components related to the natural increase of the elderly and the young. The most distinct feature is that elderly death rates have reduced after 1980, while the reduction of the young death rates has begun earlier.[3] Table A in Appendix also demonstrates regional variation of elderly natural increase. Jeonnam has relatively lower elderly birth rate (i. e., those aged to 65) and higher elderly death rate than any other areas.

The results of migration are presented in Table 3. The migration effects of the old and the young also quite vary depending on region and period. Three patterns are observed for the period 1975−1980. First, Seoul, Pusan, Gyeongbug, Gyeongnam, and Jeju have experienced the net in - migration of both the old and the young. Despite the inverse effects of the old and the young, annualized net migration rates of the young exceed those of the old, producing the decrease of the percentage of the aged. Second, Gyeonggie, Gangweon, Chungbug, Chungnam, and Jeonbug have showed the net out - migration of both the old and the young. In these areas the net out - migration rates of the young are far greater

3) The reliability of basic data used is certainly related to the validity and reliability of this study. Although elderly deaths for 1975 seemed underreported, relatively lower death rates of elderly in 1975 reflect true higher elderly death rate.

than those of the old, resulting in the increase of the percentage of the elderly. Third, Jeonnam has experienced the net in - migration of the old and the net out - migration of the young, which have resulted in the increase of the percentage of the elderly.

Table 3. Regional Annual Net Migration Rate for the Elderly and the Young, 1975−1980

	1975−1980		1980−1985	
	Elderly	Young	Elderly	Young
Seoul	5.14	5.99	−0.05	0.69
Pusan	4.05	5.38	0.53	0.60
Gyeonggie	−1.15	−2.05	1.94	2.92
Gangweon	−1.03	−3.02	−0.43	−1.76
Chungbug	−0.12	−1.07	−0.57	−1.56
Chungnam	−0.84	−2.47	−0.45	−1.18
Jeonbug	−0.76	−3.54	−0.61	−1.83
Jeonnam	0.11	−0.41	−0.52	−1.73
Kyeongbug	0.17	2.33	−0.23	−0.69
Kyeongnam	0.10	0.82	−0.20	−0.22
Jeju	0.31	0.62	0.08	−0.33

For the period between 1980 and 1985, four patterns emerged. First, Pusan and Gyeonggie have experienced net in - migration of both the old and the young. In these areas also the net in - migration rates of the young exceed those of the old, resulting in the decrease of the percentage of the elderly. Second, Jeju has experienced the net in - migration of the old and the net out - migration of the young. They have contributed to increase the percentage of the elderly. Third, Seoul, in contrast to Jeju, has experienced the net out - migration of the elderly and the net in - migration of the young, which have reduced the percentage of the aged. Finally, other areas showed net out - migration for both the old and the young. The net out - migration rates of the young far exceeded those of the elderly, resulting in the increase of the percentage of the old.

Ⅳ. Discussion

This study examines the changes in the relative proportion of the elderly for the period 1975−1985 focusing on the regional differentials. The absolute and relative growth of the elderly are highly interrelated but not synonymous. Thus, demographic processes involved in the changes in the proportion of the elderly are investigated by components of net migration and natural increase for those aged 65 and over and those less than 65. This study focuses on the trend rather than on the absolute size in analyzing the contribution of net migration and natural increase to the changes in the percentage of the aged.

To summarize the results, Seoul, Pusan, and Gyeonggie have relatively lower proportion of elderly population than other areas, and all areas have experienced the increase in the percentage of the elderly for the period between 1975−1985. But, the demographic processes involved in these changes vary depending on region and period. The natural increase effect of the aged on the changes in the percentage of the elderly is quite a contrast by a turning point of 1980. For 1975−1980, all areas have experienced the decrease of the natural increase rates of the elderly, which certainly reduced the percentage of the elderly. For 1980−1985, however, almost all areas have experienced the increase of the natural increase rate of the aged. The natural increase of the young has contributed to the increase of the percentage of the elderly. For 1975—1980 some areas have experienced the decrease of the natural increase rate of the young, while this trend has been extended to all areas for 1980—1985. Generally speaking, after 1980 postdemographic transition in mortality reduction has focused on the survivorship of the elderly.

The young population concentration to large cities was the major factor in determining the percentage of the elderly in all areas. The net in - migration of the young to Seoul during 1975—1980 was extended to Gyeonggie for the period 1980—1985, contributing to the decrease of the percentage of the elderly in Seoul, Pusan, and Gyeonggie and to the increase of the elderly proportion in other areas. In other words, the relatively lower proportion of the aged in Seoul, Pusan, and Gyeonggie is primarily due to the net in - migration of the young to these areas.

In this context, elderly migration should not be overlooked. Although Pusan and Gyeonggie show net in - migration of the elderly, Seoul has experienced net out - migration of the elderly during 1980—1985 period. Similarly, most areas have experienced net out - migration of the aged, yet Jeju has experienced net in - migration in the period of 1980—1985. Traditionally elderly migration has been neglected in Korea. However, the above results suggest that the elderly migration has various impact on the sociodemographic structure of areas. Furthermore, their migration patterns draw us to the tentative conclusion that the motivations of elderly migration are different from those of young migration.

The reasons for movement at the younger ages do not apply to the older ages. Conditions related to job and education are less important than such noneconomic determinats as climate, recreation, and health facilities (Wiseman, 1980 ; Heaton et al., 1980, 1981). The changes in housing needs associated with the family life cycle, albeit important at younger ages, also dominate at the older ages. For example, the old may move to nursing homes or the residences of their children with a spouse's death. The results of this study underlie the noneconomic reasons of the elderly migration. Seoul's net out - migration of the elderly and Jeju's net in - migration of the elderly imply that at least the part of wealthy older population may leave crowded city for the amenity areas (warm with abundant recreational resources). Nevertheless, the major stream of the elderly migration, that is, the movement to Seoul and Gyeonggie, may be due to dependency of the elderly. In our absence of public assistance to the elderly, the economically and physically helpless aged must follow their children who migrate mainly for economic reasons to Seoul and Gyeonggie. Certainly, the pattern and characteristics of elderly migration are quite different form those of general younger migration and yet have received little attention.

However, we should not overlook the fact the geographic distrbution of the elderly is typically not a result of active voluntary movement of their own. As Golant (1972) has noted, inertia, low income, and neighborhood ties retard adjustments to their desires, and geographic concentrations of the elderly tend to result from immobility rather than mobility. Elderly people are left behind in the old, poor, rural, decaying areas, while younger persons migrate to large cities for better opportunities. This phenomenon is outstanding in Koera so that rural households composed of only older persons suffer from severe economic, physical, and psychological difficulties. But, social and medical services are absent for needy rural elderly persons.

An increase in the proportion of the elderly population undoubtedly has consequences for the viability of regional economies. Increases in the proportion of older residents may imply higher levels of economic dependency, lower stability of local tax bases, especially if the relative growth of the elderly population is due largely to the out - migration of younger residents. Elderly population growth also creates increased demands and needs for special social and medical services. Growth in the percentage of elderly may also have significant political and cultural consequences, since an aging population may be a more conservative and less educated population (Day, 1978). Unless any preventive strategies are taken, the current sociodemographic circumstances can even widen the regional gap in various political, economic, social, and cultural aspects.

A characteristic feature of the older population is the large proportion of women living alone as compared with men. An important issue related to this phenomenon is the economic status of women in their later life. Women's lower participation at economic activities at their younger ages coupled with their lengthened longevity and the decline in the extended family recommends to reconsider our job market for women, retirement policy, public support system, and familial dependency.

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《Appendix》

Table A. Crude Birth and Death Rates for the Elderly, 1975−1985 *

	1975		1980		1985	
	Birth	Death	Birth	Death	Birth	Death
Seoul	120.16	53.23	103.57	55.85	101.26	50.27
Pusan	108.94	60.62	100.39	63.50	110.77	59.80
Gyeonggie	113.75	71.71	102.50	67.16	99.89	58.02
Gangweon	113.03	87.22	101.48	82.82	93.64	65.61
Chungbug	112.49	86.91	97.65	85.35	89.96	80.41
Chungnam	105.76	71.61	97.00	75.78	90.99	61.87
Jeonbug	102.38	77.75	97.04	90.29	97.05	65.83
Jeonnam	87.99	91.71	80.88	102.43	93.51	75.10
Kyeongbug	101.64	70.75	98.04	84.72	94.11	64.80
Kyeongnam	94.42	78.06	89.43	81.39	96.41	63.79
Jeju	78.81	36.81	64.68	63.50	70.68	49.02
Average	103.58	71.49	93.88	77.53	94.42	63.14

* rates are per 1,000

Table B. Crude Birth and Death Rates for the Young, 1975−1985*

	1975		1980		1985	
	Birth	Death	Birth	Death	Birth	Death
Seoul	22.69	2.58	24.33	2.39	16.29	1.99
Pusan	21.84	2.97	25.91	2.84	15.59	1.60
Gyeonggie	22.05	4.09	23.86	3.58	18.12	2.72
Gangweon	25.21	5.84	21.68	5.10	14.77	4.10
Chungbug	24.40	6.12	22.65	5.42	14.82	3.34
Chungnam	27.41	4.81	22.30	4.64	14.16	3.64
Jeonbug	25.42	5.80	24.47	5.50	13.45	4.29
Jeonnam	28.50	5.94	28.05	6.27	13.49	4.75
Kyeongbug	25.69	4.76	23.56	4.58	14.59	3.63
Kyeongnam	30.27	5.98	24.52	4.53	16.78	3.71
Jeju	25.63	2.52	28.01	3.78	11.11	2.77
Average	25.37	4.67	24.49	4.42	14.83	3.32

* rates are per 1,000