

Statistical Analysis of the Usage Type of Online Cremation Reservation Service in Funeral Information System

: Focused on the Public Cremation Facilities of Incheon Metropolitan City

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Abstract

As of 2016, the cremation rates in the capital area are 91.2% in Incheon Metropolitan City, 87.5% in Seoul Special City, and 87.1% in Gyeonggi-do Province, of which Incheon has the highest rate, and cremation of general corpses through the online cremation reservation service of the funeral information system is continuously increasing every year. And as of 2017, the ratio of the cremation for those outside the jurisdiction (residents of other regions) among the users of public cremation establishment in Incheon, is about 32%. As the supply capacity is expected to reach the limit within several years due to the increase in demand for such a cremation facility, I would like to suggest a policy as follows. The expansion of cremation supply capacity by increasing the number of operations in the cremation furnace; The attractions of operating funds through contracts for joint use of the cremation facility with other local governments and investment funds for the expansion of cremation facilities; The plan for controlling the demand in cremation such as an increase in cremation charge for those outside the jurisdiction(residents of other regions), should be considered.

Keywords: *Funeral Information System, Public Cremation Facilities, Online Cremation Reservation, Usage Type*

1. Introduction

Ministry of Health and Welfare has established a funeral information system to operate all the cremation facilities in Korea with an unified reservation system, and has been operating throughout the nation from 1st

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of Nov. 2011. Accordingly, when a user wants to use a cremation facility, it is obligatory to use the online cremation reservation service of the funeral information system(www.ehaneul.go.kr)[1]. In addition, the current online service is operating its reservation system by dividing the type of use into general corpse(adult, child, Someone without Family or Friends), Opening remains, and dead fetus[2].

As for the current status of using the online cremation reservation service in the funeral information system, general corpses were 182,946[3] in 2011, and increased to 232,128 by 26.9% in 2016. In addition, the cremation ratio of the whole country as of 2016 is 82.7%, which is about 4 times higher than the cremation ratio of 20.5% in 1994, and the cremation ratios by local governments in the capital area as of 2016 were high in order of 91.2% in Incheon, 87.5% in Seoul, and 87.1% in Gyeonggi-do[4]. Therefore, the purpose of this study is to suggest a policy to improve the efficiency of the use of public cremation facilities by analyzing the actual state of the use of the online cremation reservation service targeting at the public cremation facilities in Incheon which have the highest cremation ratio among those in the capital area.

2. Operational Status of the Public Cremation Facilities on Incheon Metropolitan City

Incheon Metropolitan City constructed a public cremation facility equipped with 20 cremation furnaces in 61 Pyeongon-ro, Bupyeong-gu, Incheon with the area of 5,608.22 m² in 1977 and has been operating it ever since. And the daily cremation disposal capacity is 72 bodies, and the service fees are as the following Table 1 [5][8-9].

Table 1. Status of fees of the Public Cremation Facilities on Incheon Metropolitan City

Sort	Corpse			Opening Remains	Dead Fetus
	Adult (Ages 15 and Over)	Child (Ages 15 and Under)	Someone without Family or Friends		
Jurisdiction	160,000won	130,000won	Free	100,000won	50,000won
The Outside of the Jurisdiction	1,000,000won	400,000won	-	400,000won	300,000won

3. Statistical Analysis the Usage Type of Online Cremation Reservation Service in Funeral Information System

3.1 Analysis Coordination Division status

During the period from 2011 to 2017, when the online cremation reservation service was launched nationwide, the trend that citizen users of the public cremation facilities in Incheon use the online cremation reservation service is as Figure 1.

In the beginning of the introduction of the online cremation reservation service, year 2011, the number of total use increased from 17,924 to 23,783 by 5,859, which is an increase by 32.7% [6]. It also shows a slight increase and decrease every year repeatedly, and a steady rising trend for the past 3 years.

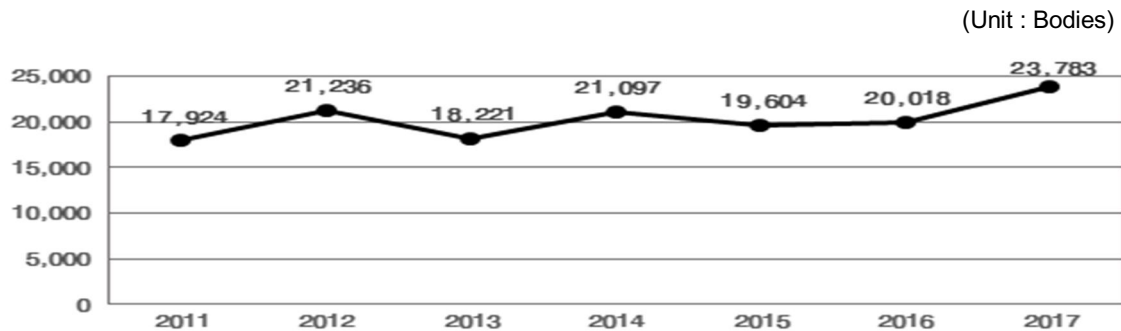


Figure 1. Usage Progression of Online Cremation Reservation Service in Funeral Information System by year(generalization)

The current status of types of using the Incheon public cremation facilities through the funeral information system online reservation service is as Table 2[6], and it was analyzed that general corpse are increasing continuously every year.

Table 2. The Usage Type of Online Cremation Reservation Service in Funeral Information System by year

(Unit : Bodies)

Year	Sum	Corpse	Opening Remains	Dead Fetus
Sum	141,883	119,228	21,468	1,187
2011	17,924	15,319	2,479	126
2012	21,236	15,563	5,514	159
2013	18,221	16,322	1,749	150
2014	21,097	16,928	3,959	210
2015	19,604	17,434	1,989	181
2016	20,018	18,299	1,564	155
2017	23,783	19,363	4,214	206

The current status of types of the funeral information system online reservation service use during the survey period of this study which is from 2011 to 2017, is as Figure 2. In addition, among the 141,883 total cremated bodies, general corpse were 119,228 with the highest ratio of 84.0%, Opening remains 21,486 with 15.1%, and dead fetus 1,187 with the lowest 0.9%.

As a result of this study, the general corpses showed a steady increasing trend, and the Opening grave remains showed an increasing trend only in the leap years while the dead fetus showed irregular use of increase and decrease.

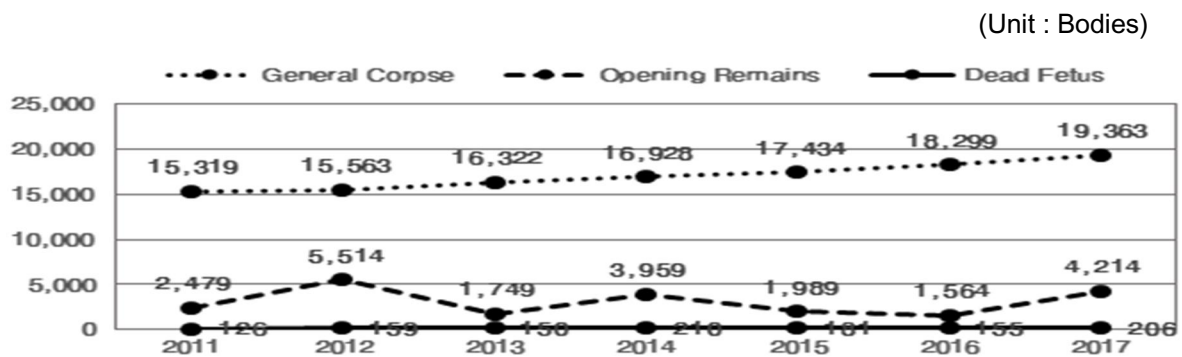


Figure 2. Progression the Usage Type of Online Cremation Reservation Service in Funeral Information System by year

3.2 Analysis Result the Usage Type of Public Cremation Facilities

3.2.1 General Corpse(Adult, Child, Someone without Family or Friends)

Among the types of the funeral information system online reservation service use by the Incheon public cremation facility users, the general corpse with the highest utilization account for 81.4% of the total in 2017. In addition, it is analyzed that the use for general corpse bodies is continuously increasing every year.

In accordance with the statistics of Incheon's future population Projection released by the National Statistical Office, as shown in Table 3, the total population will be reduced every year after 2035 due to the decrease in births[7]. On the other hand, as Korea enters into an aged society at the end of August 2017, it is estimated that the number of deaths due to an increase in the elderly population will be increasing every year. Accordingly, it is analyzed that the general corpse using the Incheon public cremation facility through the funeral information system online reservation service will also be increasing every year.

Table 3. Future Population Projections on Incheon Metropolitan City(Medium Estimate)

(Unit :1,000 People)

Sort	2015	2020	2025	2030	2035	2040	2045
Total Population	2,883	2,979	3,080	3,152	3,187	3,180	3,136
Death Toll	14	16	20	23	27	31	36

The Projection of future population above is to predict the future populations by city, gender, age and variable factors(birth, death, movement) from 2015 to 2045 by utilizing the statistics of the population dynamics(birth, death) and movement on the basis of the result of the 2015 Population Census(Registered Census), and then to estimate a result by calculating with the "Cohort Component Method", a population estimation method that calculates the next year's population by applying the population equilibrium equation to add the birth and domestic movement to the reference population and exclude the death. And the population equilibrium equation is as follows[7].

▪ Demographic balancing equation

$$P_t = P_{t-1} + B(t-1, t) - D(t-1, t) + M(t-1, t)$$

P_t : tYear Population,

$B(t-1, t)$: (t-1, t) The number of the birth,

$D(t-1, t)$: (t-1, t) The death toll

$M(t-1, t)$: (t-1, t) The number of net-migrants

3.2.2 Opening Remains

During the period from 2011 to 2017, the Incheon public cremation facility users' use of the funeral information system online reservation service shows an irregular increase and decrease trend as shown in Figure 4, and especially, it is analyzed that the cremation of the open Hare has sharply increased due to the traditional practice of opening remains in the years with leap month, 2012, 2014 and 2017.

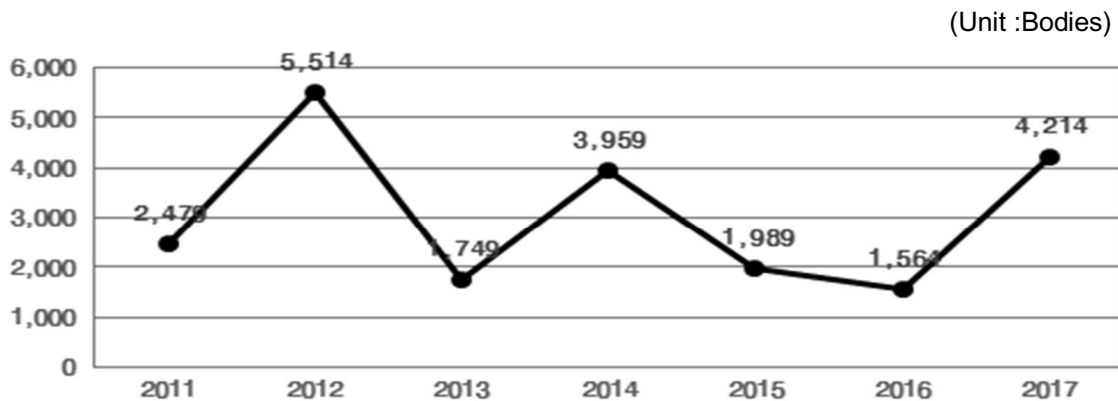


Figure 4. Usage progression of the Opening Remains of Online Cremation Reservation Service in Funeral Information System by year

3.2.3 Dead Fetus

During the period from 2011 to 2017, the Incheon public cremation facility users' use of the funeral information system online reservation service was very low, and shows an irregular repetition of little increase and decrease as shown in Figure 5. In addition, it is estimated that the use of the funeral information system online reservation service for death fetus will be reduced due to the decrease in the numbers of births and marriages.

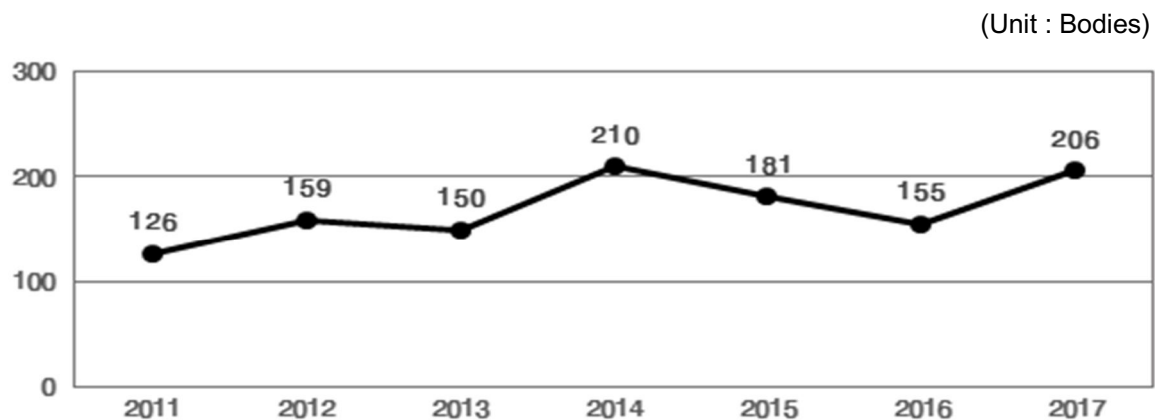


Figure 5. Usage progression of the Dead Fetus of Online Cremation Reservation Service in Funeral Information System by year

4. Conclusion

Incheon Metropolitan City shows the highest cremation rate among the metropolitan municipalities in the capital area, and as a result of this study, the number of cremation for the general corpse has been increasing steadily every year. Accordingly, the supply capacity is expected to reach its limit within a few years due to the increase in the demand of public cremation facilities in Incheon.

In order to solve the problems of Incheon public cremation facility operation related to the use of the online cremation reservation service, we propose the following policy suggestions.

First, as of 2017, the daily average number of general corpse cremation in Incheon public cremation facilities was 53, which is 73.6% compared to 72 of the supply capacity of cremation facilities. And as of 2018, the cremation demand is more than 90% compared to the cremation supply capacity in the highest season such as seasonal change when demand for cremation is increasing. Accordingly, it is necessary to expand the supply capacity of cremation facilities over the medium to long term. In order to solve this problem, it is necessary to expand 8 times of the current operation frequency of general corpse cremation furnace to 9 times of the level of Seoul municipal cremation facilities.

Second, it is necessary to allow the cremation facilities to be used on the same conditions with those of Incheon through an agreement of cremation facility joint use with the municipalities in Gyeonggi-do that are adjacent to Incheon and have no cremation facilities to the extent that there is room for cremation facility supply capacity compared to the cremation demand. At the expense of that, it is possible to attract the cost for cremation facility operation and the investment cost for the expansion of cremation facilities by supporting the share of the expenses to increase the efficiency of cremation facility operations.

Third, the total use of Incheon public cremation facilities through the funeral information online reservation service in 2016 was 23,783 bodies, accounting for 67.3% of 16,004 bodies in the jurisdiction and 32.7% of 7,779 bodies in the outside of the jurisdiction, which points out that the use outside the jurisdiction is the largest cause of cremation demand. Therefore, measures to restrict the cremation demand such as charging more cremation fees to residents in other regions should be reviewed.

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