

A Comparative Analysis on the Death Toll and the Number of Cremators Using E-Haneul Funeral Information System and Cremation Rate in the Whole Nation Metropolitan Cities

Jae Sil Choi*, Yun Ju Nam**

*Professor, Department of Mortuary Science, Eulji University, Professor, Korea

**phD Student, Department of Policy Science, Hanyang University, Korea

cjs452@hanmir.com, euljinam@naver.com

Abstract

In the study, we show the six metropolitan cities, Incheon Metropolitan City had the highest annual average rate(3.2%) of the death toll, from 2011 to 2018, and the overall annual average rise rate was 2.6%. Also, the annual average rise rate of the number of cremators using E-Haneul funeral information system, Gwangju Metropolitan City had the highest rate(7.6%) and the overall annual average rise rate was 5.6%. The annual average rise rate of the cremation rate, Gwangju Metropolitan City had the highest rate(2.8%) and the overall annual average rise rate was 1.9%.

Focusing on the actual state shown in the results of this study above, the policy measures for improving the efficiency of supply & demand policy of funeral facilities in six metropolitan cities in the whole nation could be suggested as follows. First, expanding the supply of cremation facilities in consideration of the installation period of cremation facilities. Second, given the increase in the number of cremators using E-Haneul Funeral Information System, it is necessary to expand the infrastructure for meeting the demand of using funeral facilities, such as enshrinement facilities of ash and natural burial sites. Third, in such metropolitan cities, it is difficult to resolve a conflict of location with local residents who recognize cremation facilities as unpleasant facilities. Therefore, it is necessary to devise and implement a plan for improving local residents awareness of cremation facilities and resolving the conflict of location in diversified ways. Fourth, it is predicated that Busan and Daegu Metropolitan City will face a lack of supply of cremation facilities in a short time due to the increased demand for them. Therefore, in order to meet the demand for cremation, it is necessary to construct more cremation furnaces in current cremation facilities or to jointly use and expand cremation facilities with their neighboring local government.

Keywords: Metropolitan City, E-Haneul Funeral Information System, Funeral Facility, Cremation Rate, Ash

1. Introduction

South Korea sees the fastest aging in the world. By 2025, the aged population of the country is estimated to exceed 20% of the total population, and the country will become a super-aged society. By 2067, the aged

population is predicted to continue to increase to 46.5% [1]. With the increased aged population, the death toll of the whole nation is on the constant rise [2]. Also, The cremation rate of the country continuously increased from 38.5% in 2001 to 86.4% in 2018.

With increases in the death toll and the cremation rate, there has been more demand for cremation which negatively influence the supply policy on cremation facilities. To survey and analyze actual conditions, this study selected as subjects six metropolitan cities(Incheon, Busan, Daegu, Daejeon, Gwangju, Ulsan) with a large population among seventeen provincial local governments.

In this study, E-Haneul funeral information system means the online cremation reservation system which was established to operate all cremation facilities across the nation in the unified booking system by Ministry of Health & Welfare [3]. In terms of research scope, this study utilized the statistical data of cremation and potential cremation rate, which had been reported by Ministry of Health & Welfare and Korea Funeral Culture & Policy Institute from 2011 when E-Haneul funeral information system began to be implemented nationally to 2018 when the latest potential cremation rate was announced.

The purpose of this study is to survey and analyze the actual conditions and rise rates of the death toll and the cremation rate and the number of cremators using E-Haneul funeral information system, and thereby to find a policy plan for efficient supply of funeral facilities along with the increased number of cremators using E-Haneul funeral information system.

2. The current status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate in the metropolitan cities

According to this study, it was analyzed that the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate in six metropolitan cities had been on the constant rise from 2011 to 2018 annually. Figure 1 shows the death toll in six metropolitan cities increased from 61,893 in 2011 to 72,600 in 2018 by 10,707(17.3%), and therefore the annual average rise rate was 2.5%. The number of cremators using E-Haneul funeral information system increased from 48,546 in 2011 to 65,535 in 2018 by 6,989(35.0%), and therefore the annual average rise rate was 5.0%. The cremation rate increased from 76.3% in 2011 to 89.3% in 2018 by 13.0%, and therefore the annual average rise rate was 1.9%. Given the high rise rate of the number of cremators using E-Haneul funeral information system in six metropolitan cities, it was analyzed that demand for cremation facilities was on the sharp rise yearly.

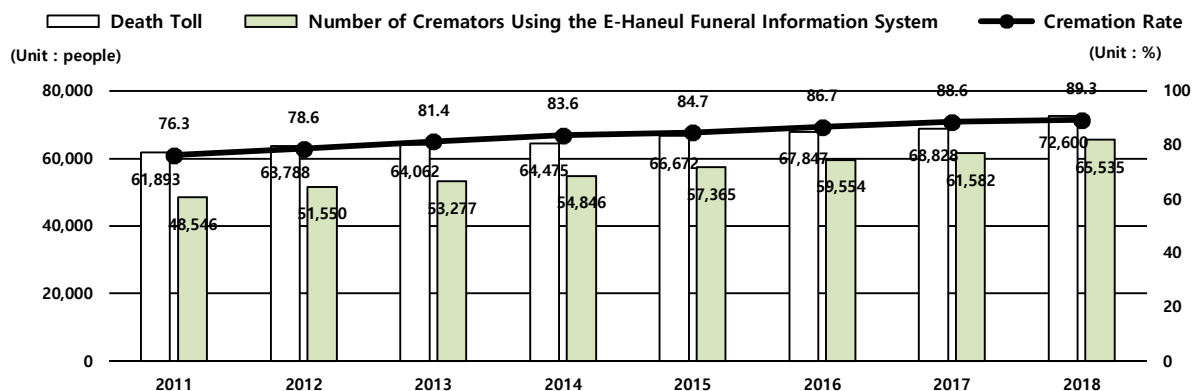


Figure 1. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by metropolitan cities

3. The death toll estimate by metropolitan cities

Table 1 shows the death toll estimate of six metropolitan cities announced in the prediction of death rate by sex and age which was calculated the basis of the estimate method in the Li-Lee-Gerland(2013) extended model with the application of population trend(mortality) statistics on the basis of the results of 2017 Population Census(Register-based Census) of Statistics Korea in 2019, the death toll is estimated to be on the constant increase from 2020 to 2045 with the annual average of 3.0%, due to the increase in the aged population during the period [4].

Table 1. Death toll estimate of each metropolitan cities by year(Medium estimate)

(Unit : 1,000 People)

Sort	2020	2025	2030	2035	2040	2045
Sum	79	92	104	117	134	153
Incheon	17	20	23	27	32	38
Busan	24	28	31	34	38	42
Daegu	15	18	20	22	25	28
Daejeon	8	9	11	12	14	16
Gwangju	9	10	11	13	14	16
Ulsan	6	7	8	9	11	13

4. Comparative analysis on the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by metropolitan cities

A comparative analysis was conducted on the 2011-2018 actual conditions and rise rates of the death toll, the number of cremators using E-Haneul funeral information system and the cremation rate in six metropolitan cities. The analysis results are presented as follows(in case of 2018, potential death toll and cremation rate) [5-12].

4.1 Incheon Metropolitan City

Figure 2 shows the death toll of Incheon Metropolitan City increased from 12,504 in 2011 to 15,300 in 2018 by 2,796 (22.4%). Among six metropolitan cities, Incheon had the highest annual average rise rate(3.2%). Of the death toll, the number of cremators using E-Haneul funeral information system increased from 10,589 in 2011 to 14,190 in 2018 by 3,601(34.0%), and therefore the annual average rise rate was 4.9%. The cremation rate increased from 84.7% in 2011 to 92.7% in 2018 by 8%, and therefore the annual average rise rate was 1.1%. According to the survey and analysis on Incheon Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 1.7% and 3.8% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the death toll and the number of cremators using E-Haneul funeral information system largely increased every year.

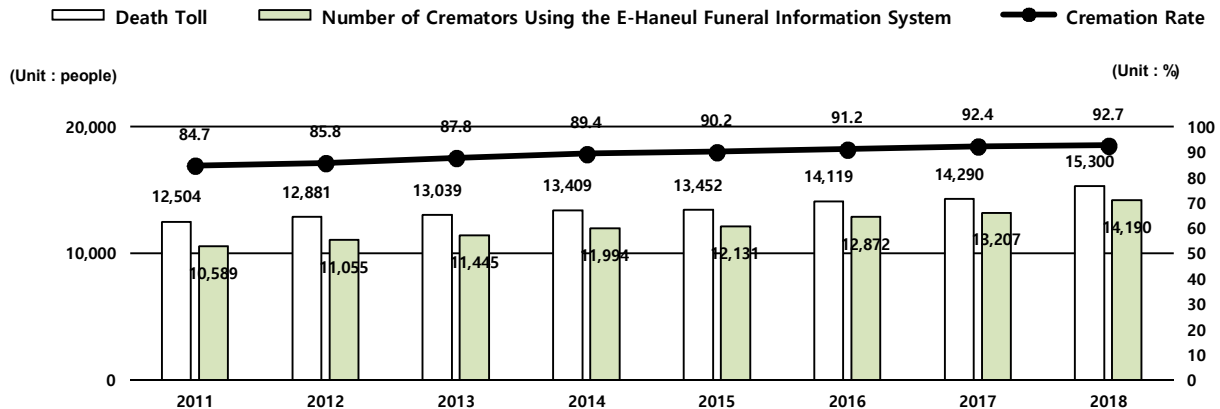


Figure 2. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Incheon Metropolitan City

4.2 Busan Metropolitan City

Figure 3 shows the death toll of Busan Metropolitan City increased from 19,643 in 2011 to 22,600 in 2018 by 2,957(15.1%), and therefore, the annual average rise rate was 2.2%. Of the death toll, the number of cremators using E-Haneul funeral information system increased from 16,848 in 2011 to 21,139 in 2018 by 4,291(25.5%), and therefore the annual average rise rate was 3.6%. The cremation rate increased from 85.8% in 2011 to 93.5% in 2018 by 7.7%, and therefore the annual average rise rate was 1.1%. Among six metropolitan cities, Busan had the highest cremation rate and the lowest rise rate. According to the survey and analysis on Busan Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 1.4% and 2.5% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the number of cremators using E-Haneul funeral information system largely increased every year.

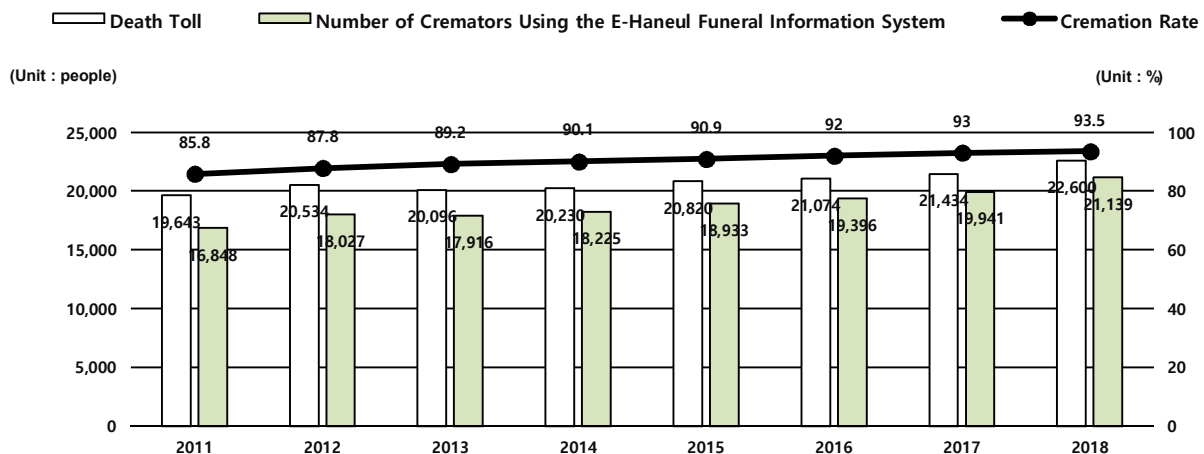


Figure 3. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Busan Metropolitan City

4.3 Daegu Metropolitan City

Figure 4 shows the death toll of Daegu Metropolitan City increased from 12,355 in 2011 to 14,100 in 2018 by 1,745 (14.1%), and therefore, the annual average rise rate was 2.0%. Of the death toll, the number of cremators using E-Haneul funeral information system increased from 8,713 in 2011 to 12,223 in 2018 by 3,510(40.3%), and therefore the annual average rise rate was high(5.8%). The cremation rate increased from 70.5% in 2011 to 86.7% in 2018 by 16.2%, and therefore the annual average rise rate was 2.3%, which is the next highest rise rate after that of Gwangju Metropolitan City. According to the survey and analysis on Daegu Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 3.8% and 3.5% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the number of cremators using E-Haneul funeral information system and the cremation rate largely increased every year.

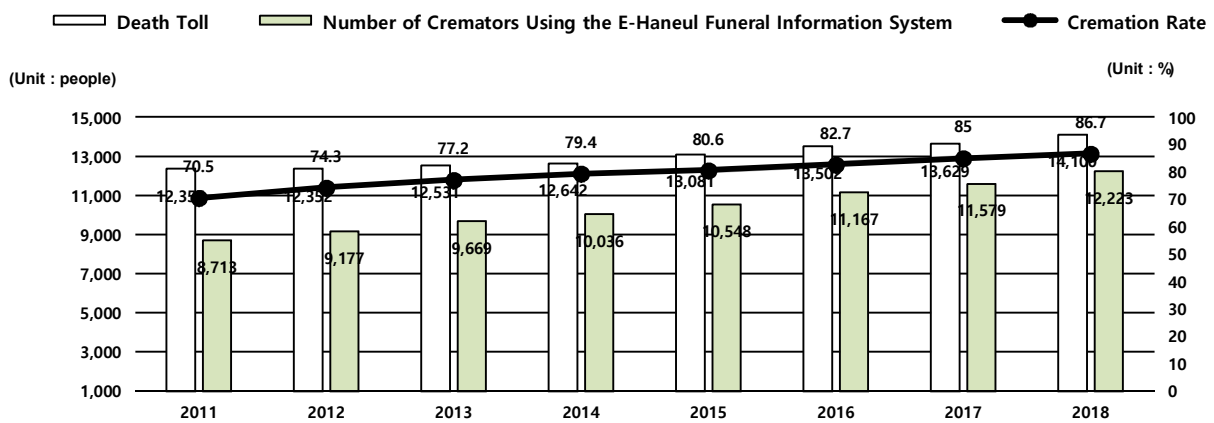


Figure 4. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Daegu Metropolitan City

4.4 Daejeon Metropolitan City

Figure 5 shows the death toll of Daejeon Metropolitan City increased from 6,336 in 2011 to 7,400 in 2018 by 1,064(16.8%), and therefore, the annual average rise rate was 2.4%. Of the death toll, the number of cremators using E-Haneul funeral information system increased from 4,488 in 2011 to 6,412 in 2018 by 1,924(42.9%), and therefore the annual average rise rate was 6.1%. The cremation rate increased from 70.8% in 2011 to 86.6% in 2018 by 15.8%, and therefore the annual average rise rate was 2.3%. Accordingly, Daejeon Metropolitan City had the next highest rise rates after Gwangju Metropolitan City in terms of the number of cremators using E-Haneul funeral information system and the cremation rate. According to the survey and analysis on Daejeon Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 3.7% and 3.8% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the number of cremators using E-Haneul funeral information system and the cremation rate largely increased every year.

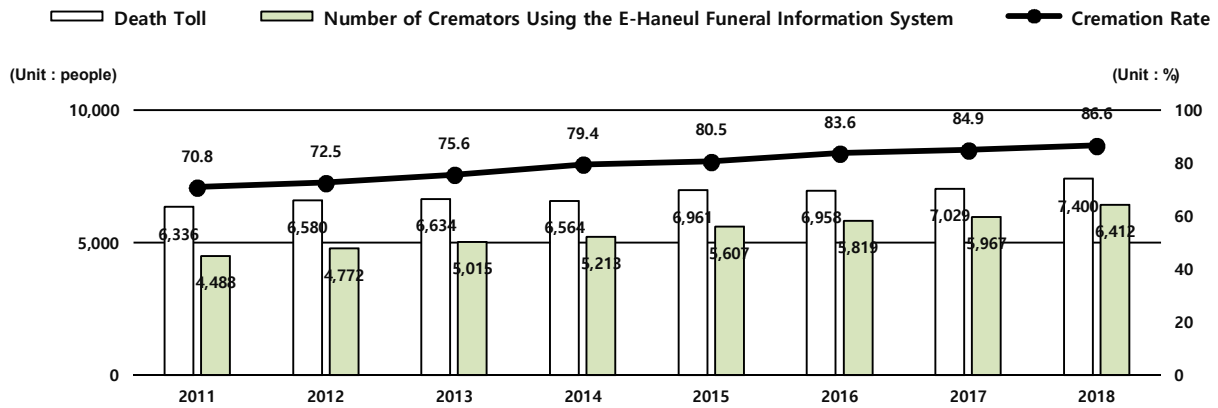


Figure 5. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Daejeon Metropolitan City

4.5 Gwangju Metropolitan City

Figure 6 shows the death toll of Gwangju Metropolitan City increased from 6,593 in 2011 to 7,800 in 2018 by 1,207 (18.3%), and therefore, the annual average rise rate was 2.6%. Of the death toll, the number of cremators using E-Haneul funeral information system increased from 4,348 in 2011 to 6,665 in 2018 by 2,317(53.3%), and therefore the annual average rise rate was 7.6%, which was the highest rise rate among the rise rates of six metropolitan cities. The cremation rate increased from 65.9% in 2011 to 85.4% in 2018 by 19.5%, and therefore the annual average rise rate was 2.8%. Among six metropolitan cities, Gwangju had the lowest cremation rate but the highest rise rate. That was because the cremation rise rate was relatively high due to the low cremation rate[13]. According to the survey and analysis on Gwangju Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 5.0% and 4.8% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the number of cremators using E-Haneul funeral information system and the cremation rate largely increased every year.

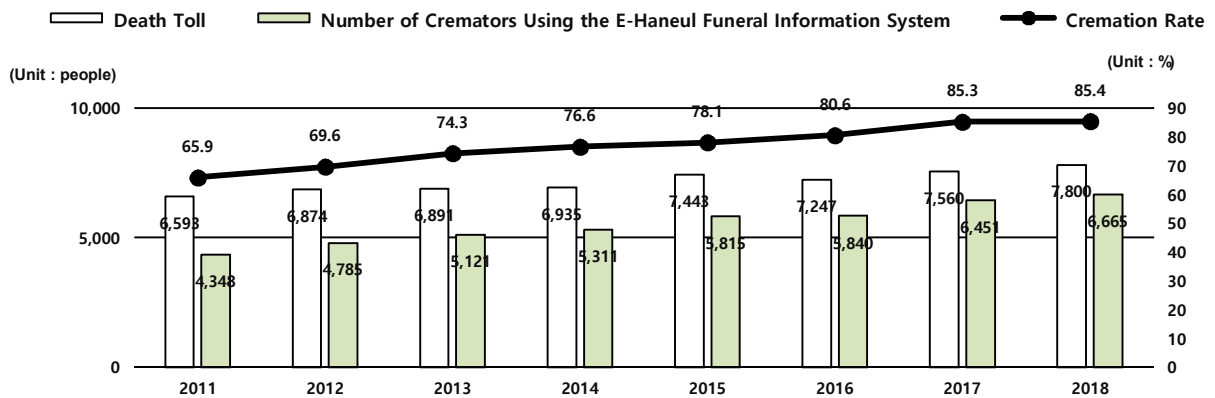


Figure 6. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Gwangju Metropolitan City

4.6 Ulsan Metropolitan City

Figure 7 shows the death toll of Ulsan Metropolitan City increased from 4,462 in 2011 to 5,400 in 2018 by 938(21.0%), and therefore, the annual average rise rate was 3.0%, which is the next highest rise rate after that of Incheon Metropolitan City. Of the death toll, the number of cremators using E-Haneul funeral information system increased from 3,560 in 2011 to 4,906 in 2018 by 1,346(37.8%), and therefore the annual average rise rate was 5.4%. The cremation rate increased from 79.8% in 2011 to 90.9% in 2018 by 11.1%, and therefore the annual average rise rate was 1.6%. According to the survey and analysis on Ulsan Metropolitan City, the annual average rise rate of the number of cremators using E-Haneul funeral information system was 2.4% and 3.8% higher than that of the death toll and of the cremation rate, respectively. Therefore, it was analyzed that the death toll and the number of cremators using E-Haneul funeral information system largely increased every year.

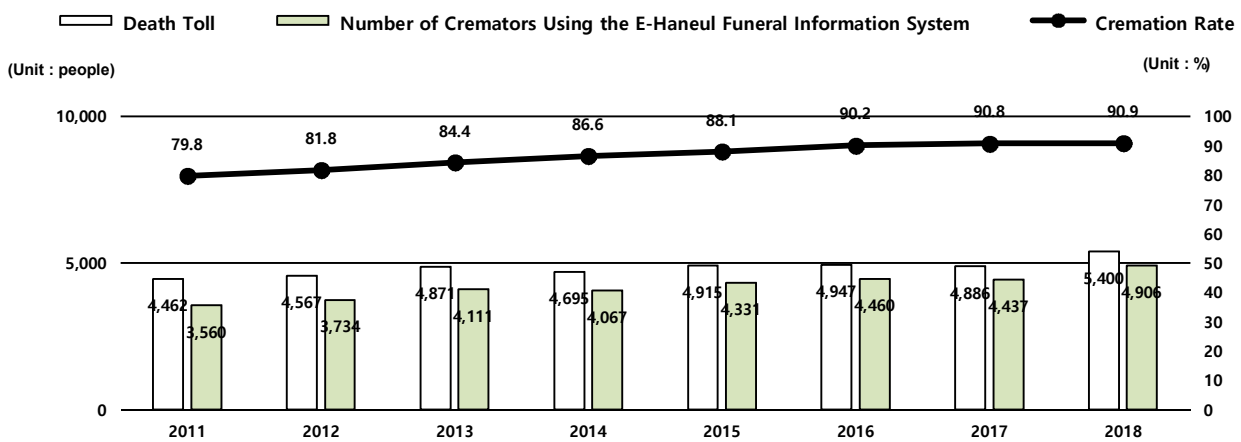


Figure 7. Status of the death toll and the number of cremators using E-Haneul funeral information system and the cremation rate by year in Ulsan Metropolitan City

5. Comprehensive Analysis Results

In this study, the 2011-2018 actual conditions and rise rates of the death toll, the number of cremators using E-Haneul funeral information system, and the cremation rate were analyzed. The results are presented as follows.

First, in terms of the annual average rise rate of the death toll in each one of six metropolitan cities, Incheon Metropolitan City had the highest rate(3.2%), followed by Ulsan Metropolitan City(3.0%), Gwangju Metropolitan City(2.6%), Daejeon Metropolitan City(2.4%), Busan Metropolitan City(2.2%), and Daegu Metropolitan City(2.0%) in order. The overall annual average rise rate was 2.6%. In addition, metropolitan cities with a small population, except for Incheon Metropolitan City, had a high rise rate of the death toll. Second, regarding the annual average rise rate of the number of cremators annual average using E-Haneul funeral information system, Gwangju Metropolitan City had the highest(7.6%), followed by Daejeon Metropolitan City(6.1%), Daegu Metropolitan City(5.8%), Ulsan Metropolitan City(5.4%), Incheon Metropolitan City(4.9%), and Busan Metropolitan City(3.6%) in order. The overall annual average rise rate was 5.6%. The reason why the rise rate of the number of cremators annual average using E-Haneul funeral information system was high was that both the death toll and the cremation rate increased. In Busan Metropolitan City and Ulsan Metropolitan City, a decrease in the death toll led to a fall in the number of cremators using E-Haneul funeral information system. Given that, it was analyzed that a rise or fall in the death

toll influenced an increase or decrease in the number of cremators using E-Haneul funeral information system. Third, with regard to the annual average rise rate of the cremation rate, Gwangju Metropolitan City had the highest rate(2.8%), followed by Daejeon Metropolitan City(2.3%) and Daegu Metropolitan City(2.3%), Ulsan Metropolitan City(1.6%), and Incheon Metropolitan City(1.1%) and Busan Metropolitan City(1.1%) in order. The overall annual average rise rate was 1.9%. In addition, a metropolitan city whose cremation rate was low had a high increase in the cremation rate. That was because a low cremation rate brought about a relatively high increase in the cremation rate.

6. Conclusion

In the study, we show the policy measures for improving the efficiency of supply & demand policy of funeral facilities in six metropolitan cities in the whole nation could be suggested as follows.

First, With increases in the death toll and the cremation rate in six metropolitan cities, the number of cremators using E-Haneul funeral information system was on the constant increase. Accordingly, to meet the increased demand for cremation, it is necessary to expand supply of cremation facilities in consideration of the installation period of cremation facilities. Second, given the increase in the number of cremators using E-Haneul funeral information system, it is necessary to expand the infrastructure for meeting the demand of using funeral facilities, such as enshrinement facilities of ash and natural burial sites. Third, in such metropolitan cities, it is difficult to resolve a conflict of location with local residents who recognize cremation facilities as unpleasant facilities. Therefore, it is necessary to devise and implement a plan for improving local residents awareness of cremation facilities and resolving the conflict of location in diversified ways. Fourth, it is predicated that Busan Metropolitan City and Daegu Metropolitan City will face a lack of supply of cremation facilities in a short time due to the increased demand for them. Therefore, in order to meet the demand for cremation, it is necessary to construct more cremation furnaces in current cremation facilities or to jointly use and expand cremation facilities with their neighboring local government.

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