

Evaluation on the Effectiveness of Priority Seats for the Pregnant Women on Railroad Vehicles in South Korea

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Abstract

The purpose of this study was to observe the status of the use of the Priority seats for the pregnant women in South Korea, and find out how effective the distinguished seat color and a sign as well as other measures are in order to prevent “unwelcome use” of the Priority seats by non-pregnant passengers.

In comparison with the result of the study conducted by Mizuno et al. (2019) in November 2018 and March 2019, this study shows a higher availability rate for the Priority seats for the pregnant women albeit only slightly.

The availability rate for the Priority seat for pregnant women in Busan Subway was low, in other words, the percentage of “unwelcome users” was high. The Priority seats were not easily recognizable for the passengers because the color was not distinguishable or there were no signs underfoot of the seats.

It is natural for the elderly passengers to think they are entitled to use the priority seats if there is a mixed presence of the Priority seats exclusively for pregnant women and those doubled as general priority seats. The Priority seats for the pregnant women need to be clearly separated from general priority seats.

Key words: Priority seats, pregnant women, South Korea

1. INTRODUCTION

Some barrier-free facilities/equipment are designated as “for exclusive use” or “for priority use”. Those “priority seats” on trains and buses are the latter case. There are some situations where “non-handicapped” passengers sitting on the priority seats fail to yield the seats even if people needing those seats are on

board. This is a problem not only in Japan but also anywhere in the world [1]. More people are especially hesitant to yield their seats to pregnant women whose conditions are not visually obvious, and as a result, pregnant women are less likely to get a seat than the disabled or the elderly people [2].

Besides, due to Confucian philosophy pervading in South Korea, the idea that young people should yield their seats to the elderly is strongly rooted in the public mind, and especially, it is deeply ingrained among the older generations. Therefore, even if a pregnant woman wants to use a priority seat, she may be asked to surrender her seat by an elderly person. Because of this situation, “Priority seats for the pregnant women” on railroad vehicles were introduced in 2011 in Daejeon city in South Korea. Subsequently, the same type of priority seats was introduced on railroad vehicles in Seoul, Busan, and Daegu as well.

The Priority seats for the pregnant women are colored pink to be distinguished from general seats and other priority seats. In some cases, illustrations of pregnant woman or text, “Please yield the seat for a pregnant woman” are displayed on the wall or underfoot asking for cooperation (Photo 1, 2, 3, and 4). Depending on the service line, there are stuffed toys placed on the Priority seats for the pregnant women (they are tied with a long string to the handrail on the side of a seat so as not to be removed) (Photo 5, 6, and 7). There are, however, some service lines that only have a sign of the Priority seats for the pregnant women on the wall without any distinguishing color of seats or any signs underfoot (Photo 8).

Mizuno, Nishidate, Nishimura, and Tokuda (2019) [3] made an observation on railroad vehicles in Seoul

city and Daejeon city as to how the Priority seats for the pregnant women were used as of November 2018 and March 2019. They found out that the percentage of “unwelcome use” of the Priority seats for the pregnant women (use of the seats by non-pregnant passengers) was high except for those times when there were several empty general seats noticeable. More specifically, the Priority seats for the pregnant women were available only for a very short period. In fact, there was only one pregnant woman using the seat as intended out of 56 non-pregnant passengers using the Priority seat.

In 2019, after conducting aforementioned research, the focus had shifted more on the support of pregnant women from a perspective of the parenting support in South Korea. The government had already started distributing pregnancy tag (Photo 9) to pregnant women so that they would receive more attention from the people around them. Awareness-raising campaign for the Priority seats for the pregnant women also has become increasingly active by playing campaign videos played in subway stations and on trains (Photo 10 and 11). Moreover, the “Pink Light” Campaign using IoT (Internet of Things) started in subway stations in Busan. (After it was introduced as a pilot campaign by Busan Light Rail between 2016 and 2018, it was removed, but in 2019 the “Pink Light” Campaign was officially introduced to Busan subway). The “Pink Light” Campaign is a system in which as a pregnant woman with a wireless communications device (IC tag) approaches, the pink device installed on the handrail (Photo 12) lights up to let the sitting people know the presence of a pregnant woman. There are awareness-raising posters posted at multiple locations in the subway stations (Photo 13).

In this study, we will observe the status of the use of the Priority seats for the pregnant women in South Korea, after the fall of 2019, and find out how effective the distinguished seat color and a sign as well as other measures are in order to prevent “unwelcome use” of the Priority seats by non-pregnant passengers.

This study consists of two parts. The first part (study 1) is an observational research for availability of the Priority seats for the pregnant women. By comparing with the study by Mizuno et al. (2019) [3], we will find out what measures have been effective and if any

effectivity of awareness-raising campaign is recognizable.

The second part (study 2) is an observation of whether those passengers seating on the Priority seats for the pregnant women yield the seat to pregnant woman.

The study should be considered as a useful material when looking into provision of Priority seats for the pregnant women in the Japanese railroad system.



Photo 1: To distinguish from general seats, the Priority seats for pregnant women are colored pink and have a sign underfoot and on the wall.



Photo 2: It is indicated on the wall behind the priority seat for pregnant women that some consideration is needed for pregnant women.



Photo 3: The pink seat is the priority seat for pregnant women while the next 3 seats are general priority seats.



Photo 6: In November 2018, there was a doll placed on the priority seat for pregnant women.



Photo 4: There is a big sign of Priority seats for pregnant women underfoot.



Photo 7: In January 2020, there was no longer a doll placed on the priority seat for pregnant women.



Photo 5: There is a stuffed toy placed on the priority seat for pregnant women.



Photo 8: There are Priority seats for pregnant women with no distinguished color or underfoot sign.

2. OBSERVATIONAL RESEARCH ON AVAILABILITY OF THE PRIORITY SEATS FOR THE PREGNANT WOMEN (STUDY 1)

(1) Purpose

In the observational research, we will find out whether the measures taken for the Priority seats would make any difference in the situation of availability of the Priority seats/unwelcome use. Also, by comparing with the result of the study by Mizuno et al. (2019) [3], we will verify effectivity of awareness-raising campaign.

(2) Method

① Location of observation

The observation was conducted on Seoul Subway (Line 1, Line 2, and Line 5), AREX, Incheon Subway Line 1, Busan Subway (Line 1, Line 2, Line 3, and Line 4), Busan Light Rail, Daejeon Subway Line 1, and Daegu Subway (Line 1, Line 2, and Line 3).

Meanwhile, the observation by Mizuno et al. (2019) [3] was conducted on Seoul Subway (Line 2, Line 3, Line 4, Line 5, and Shinbundang Line).

② Research method

Find out any difference of settings of the Priority seats for the pregnant women (the presence or absence of a sign underfoot of the seat/whether the seat is distinguished by a different color/the presence or absence of a stuffed toy placed on the seat). Also find out other conditions, including, how long the Priority seats for the pregnant women available during the observation, who were using the Priority seats for the pregnant women, and how crowded the train was. The observation was made in January to February 2020 in Seoul, and in November 2019 in Busan, Daejeon, and Daegu. The observation by Mizuno et al. (2019) [3] was made in November 2018 in Seoul and in March 2019 in Daejeon.

(3) Results and consideration

Table 1 and 2 show different settings of the Priority

seats for the pregnant women and the availability rate of the seats, observed in this study and the study by Mizuno et al. (2019) [3] respectively. Table 3 shows who were found out to be sitting on the Priority seats for the pregnant women in this study (every passenger using the priority seat was by “unwelcome use”) while Table 4 shows who were found out to be sitting on the Priority seats for the pregnant women in the study by Mizuno et al. (2019) [3] (every passenger except one pregnant woman using the Priority seats was by “unwelcome use”).

Table 1 demonstrates that the Priority seats with pink color and a sign underfoot, indicating as the Priority seats for the pregnant women, have higher rate of availability. To the contrary, the Priority seats without distinguished pink color nor a sign on Busan Subway Line 1, Line 2, and Line 3 were used by “unwelcome users” during most of the observation period. Busan Subway Line 4 had similar conditions as Busan Subway Line 1, 2, and 3, but there were constantly fewer passengers because this Line travels in the area distant from inner city, thus there were more seats available in general. That may be the reason why the Priority seats for the pregnant women were available for a longer time. The Priority seats for the pregnant women on Incheon Subway Line 1 have a sign but no color distinction, but the availability of the Priority seats for the pregnant women was similarly higher. The generally fewer passengers may be related to that result as well (Photo 14).

In addition, there were some passengers who used the Priority seats for the pregnant women even if there are general seats available (Photo 15 and 16). But more often, the general seats became filled up while the Priority seats were still available (Photo 17, 18, and 19).

The presence or absence of a stuffed toy did not give any significant effect on the availability of the Priority seats. If there is a stuffed toy placed on the

Priority seat, a passenger would need to sit with the toy on his/her lap (Photo20), or sit on the toy (Photo 21), or sit on the front edge of a seat and put the toy behind his/her back. This could get in the way for passengers including pregnant passenger, thus considered not effective.

A comparison of Table 1 and Table 2 demonstrates that the availability of the Priority seats was slightly higher at the time of this study than the time of the study by Mizuno et al. (2019) [3]. From this result, it is considered that the awareness-raising campaign for the Priority seats for the pregnant women have been effective.

Table 3 and Table 4 show that there was a higher percentage of “unwelcome user” of the Priority seats by women in their 30s to 60s. The percentage of “unwelcome user” was also higher in passengers in their 20s or younger both men and women. The awareness-raising campaign targeting younger generations has not been sufficient enough, and it is considered necessary to further promote the public awareness.

Furthermore, many passengers sitting on the Priority seats for the pregnant women were using their smartphones (Photo 22 and 23) or sleeping, showing little sign of conscious behavior of yielding their seats even when pregnant woman is getting on board. Especially those who are using an earphone listening to music on the smartphone are not capable of getting visual and auditory information of their surroundings, thus seem to be unable to recognize the presence of a pregnant woman.

However, there was a positive case, in which a child tried to sit on the Priority seat, when his mother warned about the Priority seats for the pregnant women and told him not to sit there. There was another case, when a child sat on a general seat and urged his parent to sit on the Priority seat next to him, and the parent explained why she is not sitting on the Priority seat.

In addition, there were some Lines having the Priority seats for the pregnant women that are also marked as general priority seats (Photo 24). If the seat is marked as general priority seat, then the use of the Priority seats for the pregnant women by the elderly or any other intended passengers should not be considered as “unwelcome use”. If there is a mixed existence of the Priority seats exclusively for pregnant women and the priority seats for all intended passengers doubled as priority seat for pregnant women, then the elderly passengers may get confused whether they may use those seats or not.



Photo 9: Pregnancy tag distributed to pregnant women



Photo 10: Awareness-raising campaign video for Priority seats for pregnant women played on subways in Seoul.



Photo 11: Awareness-raising campaign video for Priority seats for pregnant women played on subways in Daejeon



Photo 14: The inside of Incheon Subway Line 1



Photo 12: Equipment for "Pink Light" Campaign



Photo 15: A man sitting on a priority seat for pregnant women even when most general seats are empty



Photo 13: Awareness-raising poster for "Pink Light" Campaign



Photo 16: A woman who didn't move over even when a general seat next to the priority seat became available



Photo 17: Only the priority seat for pregnant women are available. 1



Photo 18: Only the priority seat for pregnant women are available. 2



Photo 19: A passenger who was standing when there were no seats available except for Priority seats for pregnant women



Photo 20: A woman sitting, holding a stuffed toy



Photo 21: A woman sitting, pushing over a stuffed toy



Photo 22: A passenger sitting on a priority seat for pregnant women who was absorbed in using a smartphone without checking the surroundings-1



Photo 23: A passenger sitting on a priority seat for pregnant women who was absorbed in using a smartphone without checking the surroundings-2



Photo 24: The Priority seats for pregnant women are marked also as general priority seats.



Photo 25: Noticed the presence of a pregnant woman, but didn't stop using the smartphone.



Photo 26: A couple sitting next to each other noticed the presence of a pregnant woman, but remained to be seated.



Photo 27: Didn't remove the luggage placed on a priority seat for pregnant women even if a pregnant woman was standing in front of her.

Table 1: Different settings of the Priority seats for the pregnant women and the availability rate

Line	Presence or absence of a sign underfoot	Seat color	Presence or absence of a stuffed toy	Duration of the time on board (min)	Duration of the time while the seat is available (min)	Availability rate
Incheon Subway Line 1	presence	same color as others	absence	42	34	81%
Daegu Subway Line 2	presence	pink	absence	16	12	75%
Seoul Subway Line 5	absence	pink	absence	44	32	73%
Seoul Subway Line 2	presence	pink	absence	88	51	58%
AREX	presence	pink	presence	159	87	55%
Busan Subway Line 4	absence	same color as others	absence	127	62	49%
Busan Light Rail	presence	pink	absence	74	30	41%
Daegu Subway Line 3	presence	pink	absence	144	50	35%
Daegu Subway Line 1	presence	pink	absence	152	49	32%
Daejeon Subway Line1	presence	pink	presence	156	43	28%
Seoul Subway Line 1	presence	same color as others	absence	78	19	24%
Busan Subway Line 3	absence	same color as others	absence	96	7	7%
Busan Subway Line 2	absence	same color as others	absence	114	2	2%
Busan Subway Line 1	absence	same color as others	absence	95	0	0%

Table 2: Different settings of the Priority seats for the pregnant women and the availability rate cited in the study by Mizuno et al. (2019)

Line	Presence or absence of a sign underfoot	Seat color	Presence or absence of a stuffed toy	Duration of the time on board (min)	Duration of the time while the seat is available (min)	Availability rate
Seoul Subway Line 5	absence	pink	absence	138	69	50%
Daejeon Subway Line 1	presence	pink	presence	116	53	46%
AREX	presence	pink	presence	162	65	40%
Seoul Subway Line 3	presence	pink	absence	46	15	33%
Seoul Subway Line 2	presence	pink	absence	1138	251	22%
Seoul Subway Line 4	presence	same color as others	absence	306	30	10%
Seoul Subway Shinbundang Line	absence	same color as others	absence	66	0	0

Table 3: Details of the passengers using the Priority seats for the pregnant women found in this study (N=87)

	%	n
Women apparently in their teens and 20s (non-pregnant)	15%	13
Men apparently in their teens and 20s	5%	4
Women apparently in their 30s to 60s	40%	35
Men apparently in their 30s to 60s	21%	18
The elderly apparently in their 70s and older	18%	16
Elementary school children and younger	1%	1
Pregnant women	0	0

Table 4: Details of the passengers using the Priority seats for the pregnant women found in the study by Mizuno et al. (2019) (N=55)

	%	n
Women apparently in their teens and 20s (non-pregnant)	16%	9
Men apparently in their teens and 20s	15%	8
Women apparently in their 30s to 60s	31%	17
Men apparently in their 30s to 60s	11%	6
The elderly apparently in their 70s and older	16%	9
Elementary school children and younger	9%	5
Pregnant women	2%	1

3. OBSERVATIONAL RESEARCH ON BEHAVIOR OF PASSENGERS WHO MAY OR MAY NOT YIELD THE SEAT TO A PREGNANT WOMAN (STUDY 2)

(1) Purpose

Find out how an “unwelcome user” of the Priority seats for the pregnant women behaves when a pregnant woman is standing in front of him/her.

(2) Method

① Location of observation

Busan Subway Line 1 and Daejeon Subway Line 1

② Method of observation

On Busan Subway Line 1 and Daejeon Subway Line 1, non-pregnant passengers sitting on the Priority seats for the pregnant women or unwelcome users of the Priority seats (there were 10 passengers on Busan Subway Line 1 and Daejeon Subway Line 1 respectively) were observed to find out whether they would notice a pregnant woman standing in front of them and yield the seat to her.

To avoid any potential risk, a pseudo pregnant woman with padding around her stomach, instead of an actual pregnant woman, was used in the study. The pseudo pregnant woman had a pregnancy tag as shown in Photo 9.

The observational research was conducted in November 2019.

(3) Result and consideration

The study results for Busan Subway Line 1 and Daejeon Subway Line 1 are shown in Table 5 and 6 respectively. On Busan Subway, there were two passengers who didn't notice a pregnant woman because they were sleeping. Out of the remaining eight passengers, three passengers yielded the seat to a pregnant woman, however, two of the three involuntarily surrendered their seats when they were urged to do so by bystanders.

On Daejeon Subway Line 1, all ten passengers sitting on the Priority seats for the pregnant women noticed a pregnant woman, but only half of them (five passengers) yielded their seats. What was especially disappointing was that in one case, a young woman in her 20s did not yield her seat even though she was aware of the presence of a pregnant woman. In another case, there was a passenger who was sitting on the seat next to a Priority seat for pregnant women with her luggage on the Priority seat and didn't remove her luggage even though she was aware of the presence of a pregnant woman.

Table 5: Behavior of the passengers on Busan Subway Line 1 (who were sitting on the Priority seats for the pregnant women without stuffed toy)

Who was sitting on the Priority seat for pregnant women?	Was he/she aware of a pregnant woman?	Did he/she yield the seat?	Behavior
A man in his 30s to 40s	yes	no	Noticed a pregnancy tag, took a glance at a pregnant woman, and then continued to use the smartphone (Photo 25)
A woman in her late 60s	yes	no	Told a pregnant woman to take other empty seat, and took the Priority seat herself.
A man in his 50s to 60s	no	no	Was sleeping and didn't notice a pregnant woman.
A man in his 20s	yes	no	A couple sitting next to each other. Both of them noticed a pregnant woman and caught her eye, but continued to be seated (Photo 26).
A girl who is in a higher grade at elementary school	yes	yes	Unwillingly yielded her seat when urged to do so by a woman in her 50s standing next to a pregnant woman (unrelated to the girl).
A man in his 50s to 60s	yes	no	Noticed the pregnancy tag and caught the pregnant woman's eye, but remained to be seated.
A woman in her late 70s	no	no	Was sleeping and didn't notice a pregnant woman.
A man in his 60s	yes	yes	Noticed the pregnancy tag, but pretended that he didn't notice for about 2 minutes until finally yielded the seat after some indecision.
A man in his 60s	yes	yes	Noticed the pregnancy tag, but pretended that he didn't notice. But later he yielded the seat unwillingly when urged to do so by his wife sitting next to him.
A woman in her 50s	yes	no	Noticed the pregnancy tag, but pretended that she didn't notice.

Table 6: Behavior of the passengers on Daejeon Subway Line 1 (who were sitting on the Priority seat for pregnant women with stuffed toy placed on the seat)

Who was sitting on the priority seat for pregnant women?	Was he/she aware of a pregnant woman?	Did he/she yield the seat?	Behavior
A woman in her 30s (non-pregnant)	yes	yes	Noticed the pregnancy tag, and looked at it a number of times before yielding the seat unwillingly.
A luggage of a woman in her 60s	yes	no	Put her luggage on the Priority seat for pregnant women and sat next to it. Noticed the pregnancy tag, but didn't remove her luggage (Photo 27).
A woman in her 60s	yes	yes	Noticed a pregnant woman getting on board and yielded the seat.
A woman in her 70s	yes	no	A couple of women sitting on a general seat and a Priority seat for pregnant women next to each other chatting. Both of them noticed the pregnancy tag and caught the pregnant woman's eye several times, but didn't yield the seat.
A woman in her 70s	yes	yes	Noticed the pregnancy tag. As a general seat next to the priority seat was empty, she moved to yield her seat.
A woman in her 20s (non-pregnant)	yes	no	Noticed the pregnancy tag, but remained to be seated.
A woman in her 70s	yes	no	Noticed the pregnancy tag, but remained to be seated.
An infant	yes	yes	A mother and her two children were sitting on a Priority seat for pregnant women and two general seats next to each other. The mother noticed a pregnant woman and urged her children to move over. She yielded the seat to the pregnant woman and three of them moved over and sat in the two seats.
A man in his 60s	yes	yes	Noticed the pregnancy tag and yielded the seat at once.
A woman in her 50s	yes	no	A couple of women sitting on the Priority seat for pregnant women and a general seat next to each other chatting. Both of them noticed the pregnancy tag, but couldn't yield the seat.

4. DISCUSSION

In comparison with the result of the study conducted by Mizuno et al. (2019) [3] in November 2018 and March 2019, this study shows a higher availability rate for the Priority seats for the pregnant women albeit only slightly. The promotion of the awareness-raising campaign and the gradual pervasion of the idea in the society may be considered as underlying reasons for this. We need to promote further the awareness-raising campaign.

The availability rate for the Priority seat for pregnant women in Busan Subway was low, in other words, the percentage of “unwelcome users” was high. The Priority seats were not easily recognizable for the passengers because the color was not distinguishable or there were no signs underfoot of the seats. One could argue those may be the main reasons for that. The “unwelcome use” of the Priority seats should be prevented by devising creative approach to make the Priority seats noticeable at a glance for passengers. However, it is natural for the elderly passengers to think they are entitled to use the priority seats if there is a mixed presence of the Priority seats exclusively for pregnant women and those doubled as general priority seats. The Priority seats for the pregnant women need to be clearly separated from general priority seats.

There are some opinions that it is inefficient to leave the Priority seats for the pregnant women available when the train is crowded. But even in those situations, passengers sitting on the Priority seats should be aware of the surroundings and yield the seat when a pregnant woman is on board. We would have to say it is inappropriate that the passengers sitting on the Priority seats become caught up in using the smartphone or falling in a sleep. Moreover, it was found out in this study that there were many passengers who did not yield the seat even though they were aware of a pregnant woman on board. This result is very disappointing. We would say we should

further promote awareness-raising campaign as to why pregnant women need to be seated on a train.

5. CONCLUSION

The following results were drawn from this study.

- The Priority seats for the pregnant women should be clearly identifiable with display of a sign underfoot and distinguished seat color.
- The Priority seats for the pregnant women should not be doubled as general priority seats.
- It is not effective to place a stuffed toy on the Priority seats for the pregnant women.
- It is necessary to continue promoting awareness-raising campaign for the Priority seats for the pregnant women and for the consideration to pregnant women.

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