

## Analysis of the residential space transformation of government subsidized housing program

A case study of Grand Permata Residence II Housing, Deli Serdang Regency

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ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received July 15, 2020 Received in revised form August 03, 2020 Accepted September 29, 2020 Available online April 01, 2021</p> <p><i>Keywords:</i> Space function Subsidized housing Residential space Residential transformation</p> <p>*Corresponding author: Agustina Sri Rezeki Simbolon Architectural Engineering Masters Program, Faculty of Engineering, Universitas Sumatra Utara, Indonesia Email: <a href="mailto:agustina.simbolon09@gmail.com">agustina.simbolon09@gmail.com</a> ORCID: <a href="https://orcid.org/0000-0001-6404-0333">https://orcid.org/0000-0001-6404-0333</a></p>	<p>The government is currently conducting programs to provide subsidized housing in order to meet the needs of low-income people. Some of the houses provided have, however, been modified by the residents to ensure proper and effective implementation of their activities and this indicates a benchmark of the dissatisfaction of the residents and omission of a particular thing in the initial design of the subsidized housing program provided by the government. The Grand Permata Residence II Housing used as a case study has a house with type 36/91 m2 and 13 out of 14 respondents have transformed their residential space according to their economic capacity as low-income people. This study was, therefore, conducted to map the residential space transformation of the subsidized housing program provided by the government and determine the causative factors. Primary data were obtained in the form of designs and photos of space transformation through direct observation and interviews with residents while secondary data were in the form of initial floor plans retrieved from the housing manager and analyzed using descriptive analysis techniques. The findings serve as an evaluation for the government in designing subsidized housing which meets the target and needs of low-income people.</p>

### Introduction

Housing construction is currently increasing dramatically in Indonesia and one of the contributing factors is population growth (Panggabean and Fachrudin 2014). Moreover, gender, age, education level, number of family members, occupation, history of homeownership, way of life, social activities, and ways of using space are factors determining people's preferences in selecting a place to live (Aulia and Suryani 2013). Another important factor identified to be

affecting residential transformation is human behavior (Fachrudin and Fachrudin 2017).

A house is basically a place to live and satisfy the space needed for the activities usually conducted by the residents. It is, therefore, necessary to study the factors causing changes in residential units (Sembiring, Manurung, and Aulia 2016).

Space functions as a place to conduct several activities and also connects environmental architecture with the behavior of its occupants (Lake 2014b). It affects space users or residents (Fitria 2018). The increase in the human need for

space has a great effect on land change (Lake 2014a) and this means changes in residential space are usually driven by the dynamic needs of residents (Pongai, Tresani, and Tjung 2017). The space in the residence is expected to fulfill the residents' activities, as well as being used as a place of business (Rahmi 2016). Meanwhile, transformation is defined as an unplanned, gradual, and comprehensive change usually motivated by social factors (Susanti, Komala Dewi, and Permata 2018).

Natalia and Tisnawati (2019) researched the Condongcatur Housing, Depok Sub-District, Sleman Regency and found that the housing with the same type of building has experienced changes in space due to user needs. This is observed from the changes in the function of the house to do other things apart from being a residence.

Gabriella Calista Agnes (2013) also studied the transformation of residential design in the Padma Residence housing and found almost all homeowners have transformed their post-occupancy housing as observed (1) on the front view of the building, (2) addition of a canopy to the carport, (3) changes to the kitchen, dining room, and back garden, and (4) conversion of the dining to a living or family room (Agnes 2017).

Faizah Mastutie, Suridjadi Supardjo, Racmat Prijadi (2016) researched the BTN Polytechnic subsidized house and showed the factors influencing the transformation of residential space include (1) external factors such as the original house and contoured land conditions, and (2) Internal factors such as residents' needs for certain spatial functions, economy, number of family members, preferences, and perceptual factors (Mastutie, Supardjo, and Prijadi 2016).

Temporary observations conducted as an initial hypothesis in Grand Permata Residence II Housing, Deli Serdang Regency showed the entire residential units are of the same type with an initial plan design of 36 m<sup>2</sup> house area and 91 m<sup>2</sup> land area. The residential space available in the initial conditions consists of two bedrooms, one bathroom, one living room, and not equipped with a kitchen. Almost all the residential units have experienced post-occupancy changes which

are implemented by residents in various forms according to the needs and economic capacities as low-income people (MBR).

This study aimed to map the transformation of the residential space in the subsidized housing program provided by the government through Grand Permata Residence II Housing, Deli Serdang Regency, and determine the factors causing the transformation after occupancy. The findings of this study are expected to be used as material for consideration and evaluation by the government in future designs of subsidized housing to ensure it is right on target and meet the needs of low-income people.

## Method

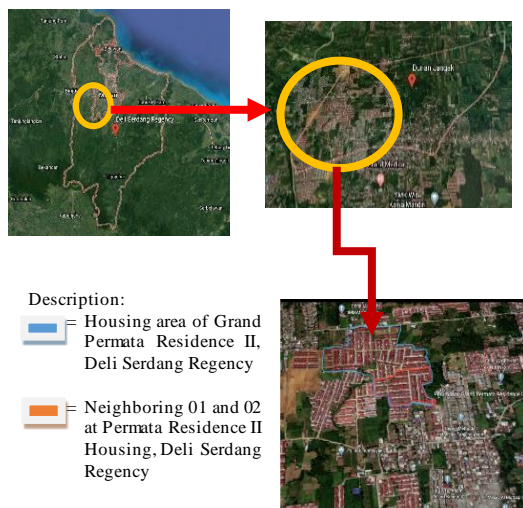
This research was conducted using qualitative methods with descriptive analysis techniques. Moreover, samples were selected using purposive sampling technique and the criteria include (1) living in neighborhood 01 and 02 areas which have a larger number of communities estimated to be 380 houses with type 36 and being a house owner as shown in figure 1, (2) the residence experienced changes in the appearance such as the addition of shop space and changes in the fences and carports, (3) the residence is located in a row position having the same land and building area, 36/91 m<sup>2</sup>, and (4) houses with changed residential space and those still in accordance with the initial plan. Fourteen residents were observed to have covered all these criteria and were used as respondents to represent 600 subsidized houses in Grand Permata Residence II Housing as presented in table 1.

The stages of this research are:

- a. Field observation by interviewing the respondents to obtain data related to spatial transformation in their dwellings.
- b. Conducting visual observations and recordings in the form of photos of the transformations in residential spaces.
- c. All the data collected from the interview results were processed according to the underlying theories.

**Table 1.** Profile of research respondents

Respondent	Name	Age	Occupation	Total family members	Religion	House code
1	D. Ginting	32 years old	Teacher	2 people	Christian protestant	P05/18
2	J. Saragih	41 years old	Supervising consultants	2 people	Christian protestant	P/07
3	D. Nainggolan	27 years old	Civil servant at village office	6 people	Christian protestant	P/08
4	P. Simangunsong	54 years old	Pedicab driver	5 people	Christian protestant	P04/27
5	R. Sihombing	41 years old	Driver	5 people	Christian protestant	P16/23
6	A. Siringo-ringo	45 years old	Journalist	4 people	Christian protestant	P plus/32
7	Y. Panggabean	48 years old	Tailor	4 people	Christian protestant	P11/04
8	E. Barus	43 years old	Salon	6 people	Christian protestant	P plus/24
9	D. Sinaga	51 years old	Welding workshop	4 people	Christian protestant	P/02
10	Y. Tambun	39 years old	Refilled drinking water	2 people	Christian protestant	P06/26
11	E. Manalu	46 years old	Grocery store	4 people	Christian protestant	P06/37
12	Heri	42 years old	Bakso stall	4 people	Muslim	P06/17
13	T. Simatupang	44 years old	Cloth traders	4 people	Christian protestant	P/06
14	W. Gultom	40 years old	Grocery wholesale	4 people	Christian protestant	P plus/01



**Figure 1.** The research sample was the Grand Permata Residence II Housing, Deli Serdang Regency



**Figure 2.** Initial plan and front view of the subsidized house for Grand Permata Residence II Housing, Deli Serdang Regency

## Result and discussion

Grand Permata Residence II Housing is a subsidized housing program located in Deli Serdang Regency, precisely at Jl. H.M. Puna Sembiring, Durian Jangak Village, Pancur Batu Subdistrict with approximately 600 type-36 houses built on about 6 ha and has been inhabited since 2015. All the housing units provided have the same initial plan design and front view as shown in figure 2.

### Residential space transformation

Transformation is a change in the form that achieves maximum function by accepting internal/external influences from the surroundings Antoniadis (1990). According to Aduwo et al. (2013), residential space transformation is a change in the shape and configuration of a house by residents to match their needs and expectations (Aduwo, Ibem, and

Opoko 2013). It involves moving furniture and renovating structures based on the spontaneous initiatives of the homeowner.

The residents' knowledge and needs are the basis for the creation of a space with the success attached to the feeling of being covered, in the form of activities and physical elements (Lake 2014b). Residence and its users have a relationship that can develop dynamically according to the space user needs (Agusintadewi, Manik, and Mahastuti 2017). A less complicated residential space transformation saves costs and construction time (Hartono 2019). The quality of residential space change is directly proportional to the economic capacity of a person or family (Tipple 2000).

According to Schmidt et al. (2011), there are several levels of change by residents in the

residential space and these include (1) mild changes, only making changes to the furniture arrangement; (2) Moderate changes, changes in the furniture as well as spatial arrangement and expansion of residential spaces; (3) Severe changes, changes in the furniture arrangement, spatial layout, room sizes, and building structure, as well as increases the space area (Schmidt, Deamer, and Austin 2011). The building was initially designed to serve as a place to live after which the function was expanded to include trade and services as seen with a house having a grocery business in the front, thereby, changing the core structure of the original house. The mapping of the residential space transformation by residents in the study area is presented in table 2 while the initial plan and photos of the houses are shown in figure 2.




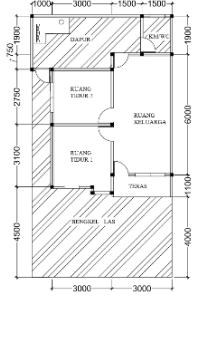

**Table 2.** Residential space transformation mapping by respondents


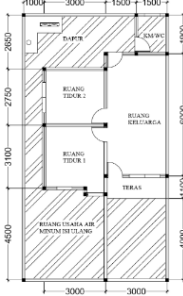

Respon dent	Change plan	Photo changes	Item changes	Analysis
1			<ol style="list-style-type: none"> <li>1. Additional space is created at the backyard with 2.65 m x 5.5 m size and used as a kitchen with tiled floors, gypsum ceiling, tin roof, and exit from an empty area which is 1 m next to the house. Therefore, the house which is originally accessed only through the front door now has 2 exits which are the front and side doors leading to the kitchen;</li> <li>2. The bathroom was initially planned to be 1.5m x 1.5m but later changed to 1.9m x 1.5m.</li> </ol>	<p>This belongs to the moderate change category. The changes were made due to the absence of space for the kitchen in the initial plan. This made the residents take advantage of the remaining land in the backyard to provide additional space for the kitchen.</p>

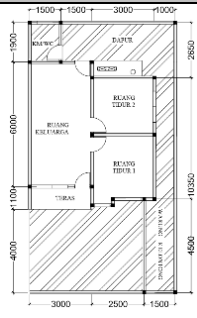

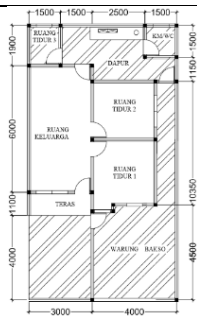
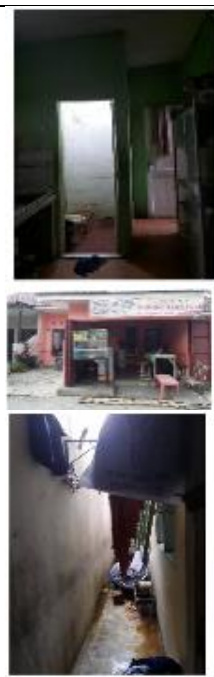
Respondent	Change plan	Photo changes	Item changes	Analysis
2			<ol style="list-style-type: none"> <li>1. Additional space was created with the backyard used as a kitchen having a size of 2.65m x 5.5m with tiled floors, gypsum ceiling, tin roof, and exit from an empty area which is 1m next to the house. Therefore, the house which is originally accessed only through the front door now has 2 exits which are the front and side doors leading to the kitchen;</li> <li>2. The bathroom was initially planned to be 1.5m x 1.5m but later changed to 1.9m x 1.5m;</li> <li>3. Bedrooms 1 and 2 are combined into one and this changed the size to 3.375m x 3m;</li> <li>4. The carport, garden, and the remaining 1m land are located on the side of the original plan. The floor is also hardened and used as a canopy to function as a terrace while the carport was used as a fence.</li> </ol>	<p>It belongs to the moderate change category.</p> <p>The residents made these changes because (1) the family room which also includes a living room is too small for a kitchen space, therefore, the remaining land in the backyard was used. (2) The room is too small and this led to the combination of bedrooms 1 and 2 into one to provide more space.</p>
3			<ol style="list-style-type: none"> <li>1. Additional space was created by converting the backyard to a kitchen with 4m x 1.9m size using tiled floors, gypsum ceiling, and a tin roof. A bathroom was also added in bedroom 2 with a size of 1.5m x 1.9m;</li> <li>2. The bathroom was initially planned to be 1.5m x 1.5m but later changed to 1.9m x 1.5m.</li> <li>3. Bedroom 2 on the initial plan was 2.75m x 3m but changed to 3.5m x 3m.</li> <li>4. The carport, garden, and the remaining 1m land are located on the side of the original plan. The floor is hardened using a canopy and the whole function is used as a carport and a place to play for children using fence openings 2.</li> </ol>	<p>It belongs to the moderate change category.</p> <p>The residents made the changes because (1) the initial plan did not provide a kitchen and this led to the use of the remaining land in the backyard as an additional kitchen space. (2) The room is too small and the occupants take advantage of the remaining 1m land to increase the bedroom 2 size. (3) The bathroom available in the existing condition is only 1 unit, therefore, the residents maximize the remaining land in the backyard to add a kitchen space and a bathroom in bedroom 2.</p>


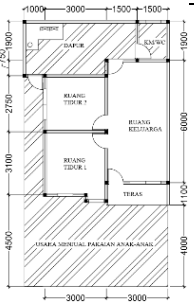

Respondent	Change plan	Photo changes	Item changes	Analysis
4			<ol style="list-style-type: none"> <li>1. Another space in the backyard with a size of 5.5m x 2.65m was utilized as a kitchen and the floor was hardened, no ceiling, tin roof, unpainted walls, and an exit was created from an empty area 1m next to the house. Therefore, the house which is originally accessed only through the front door now has 2 exits which are the front and side doors leading to the kitchen.</li> <li>2. The bathroom was initially planned to be 1.5m x 1.5m but later changed to 1.9m x 1.5m.</li> <li>3. The carport, garden, and the remaining 1m land are on the side of the original plan, the whole floor is hardened using a fence, without a canopy, to function as a parking lot for pedicabs and a place for children to play.</li> </ol>	<p>It belongs to the moderate change category.</p> <p>The residents made the changes because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9m x 1.5m. (2) There is no provision for a kitchen in the original plan and this makes residents use the remaining land in the backyard to create the space.</p>
5			<p>The house has its original shape according to the initial design with no additional rooms. The vacant land is partitioned by a door and the things which are supposed to be placed in the kitchen such as a stove and sink are partitioned with a wardrobe in the family room.</p>	<p>It belongs to the mild changes category since the residents change only the furniture arrangement (adjustable). The residents made the change due to their financial inability to add more space.</p>

Respondent	Change plan	Photo changes	Item changes	Analysis
6			<ol style="list-style-type: none"> <li>Another space in the backyard with a size of 5.5 m x 2.65 m was utilized as a kitchen having a ceramic floor, no ceiling, tin roof, and an exit was created from an empty area 1 m next to the house. Therefore, the house which is originally accessed only through the front door now has 2 exits which are the front and side doors leading to the kitchen.</li> <li>The bathroom was initially planned to be 1.5 m x 1.5 m but later changed to 1.9 m x 1.5 m.</li> <li>The carport, garden, and the remaining 1 m land are on the side of the original plan, the whole floor is hardened using a fence, without a canopy, to function as a parking lot for pedicabs and a place for children to play.</li> </ol>	<p>It belongs to the moderate change category.</p> <p>The residents made the changes because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9 m x 1.5 m. (2) There is no provision for a kitchen in the original plan and this makes residents use the remaining land in the backyard to create the space.</p>
7			<ol style="list-style-type: none"> <li>Additional space was created in the backyard to serve as a kitchen with a size of 2.65 m x 5.5 m using tiled floors, gypsum ceiling, and a tin roof.</li> <li>The bathroom was 1.5 m x 1.5 m in the initial plan but changed to 1.9 m x 1.5 m.</li> <li>An additional sewing room with a size of 2.75 m x 1 m is created in the side area with access to the remaining 1 m land next to the house and this increased the access to the house to two, from the front and side doors which lead to the sewing room.</li> <li>The carport, garden, and the remaining 1 m land are on the side of the original plan, the whole floor is hardened using a fence, without a canopy, to function as a parking lot for motorbikes and a place for children to play.</li> </ol>	<p>This is included in the severe change category due to the increase in the building's function to accommodate clothing sewing services.</p> <p>The residents made these changes because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9 m x 1.5 m. (2) There is no provision for a kitchen in the original plan and this makes residents use the remaining land in the backyard to create the space. (3) The occupants use the remaining 1 m land next to the house as a sewing room to</p>

Respondent	Change plan	Photo changes	Item changes	Analysis
				<p>increase the income for the family.</p>
8			<ol style="list-style-type: none"> <li>1. Additional space was created in the backyard to serve as a kitchen with a size of 2.65m x 5.5m using tiled floors, gypsum ceiling, and a tin roof.</li> <li>2. The bathroom was 1.5m x 1.5m in the initial plan but changed to 1.9m x 1.5m.</li> <li>3. Additional salon space is created on the remaining 1m land and carport which has tiled floors, gypsum ceiling, and zinc roof.</li> <li>4. The garden position on the plan was originally used as a terrace for children to play and park for motorbikes with hardened floors, using a canopy and fence.</li> </ol>	<p>This is included in the severe change category due to the increase in the building's function to accommodate the salon business. The changes are made because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9m x 1.5m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space (3) The remaining 1m land, carport, and garden at the front are used as the salon business space.</p>
9			<ol style="list-style-type: none"> <li>1. Additional space was created in the backyard to serve as a kitchen with a size of 2.65m x 5.5m using tiled floors, gypsum ceiling, and a tin roof.</li> <li>2. The bathroom was 1.5m x 1.5m in the initial plan but changed to 1.9m x 1.5m.</li> <li>3. The floors of the carport, garden, and the remaining 1m land from the original plan are hardened, canopy, and fences are installed, and the space is used as a place for an iron welding workshop.</li> </ol>	<p>This is included in the severe change category due to the increase in the building's functions to accommodate an iron welding workshop. The changes are made because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the</p>

Respondent	Change plan	Photo changes	Item changes	Analysis
				<p>size to 1.9m x 1.5m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space (3) The remaining 1m land, carport, and garden at the front are used as an iron welding workshop.</p>
10			<ol style="list-style-type: none"> <li>1. Additional space was created in the backyard to serve as a kitchen with a size of 2.65m x 5.5m using tiled floors, gypsum ceiling, and a tin roof.</li> <li>2. The bathroom was 1.5m x 1.5m in the initial plan but changed to 1.9m x 1.5m.</li> <li>3. An additional drinking water refill business space is established on the remaining 1m land and carport using tiled floors, gypsum ceiling, and tin roofing.</li> <li>4. The garden on the plan was originally used as a terrace for a playground and park for motorbikes with tiled floors, a canopy, and a fence.</li> </ol>	<p>This is included in the severe change category due to the increase in the building's functions to accommodate the drinking water refill business. The changes are made because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9m x 1.5m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space (3) Residents utilize the remaining 1m land, carport, and garden at the front as a business space for a drinking water refill.</p>

Respondent	Change plan	Photo changes	Item changes	Analysis
11			<ol style="list-style-type: none"> <li>1. Additional space was created in the backyard to serve as a kitchen with a size of 2.65 m x 5.5 m using tiled floors, gypsum ceiling, and a tin roof with doors to access the grocery store business space.</li> <li>2. The bathroom was 1.5 m x 1.5 m in the initial plan but changed to 1.9 m x 1.5 m.</li> <li>3. A grocery store business space is added using the remaining 1 m land area and the carport using hardened floors, tin roofs, and without ceilings.</li> <li>4. The position of the park on the plan is used as a terrace for children to play, tables and chairs for buyers to sit, and parking for motorbikes with hardened floors and canopy and without fences.</li> </ol>	<p>It is included in the category of severe change because the building function is increased apart from being a place to live but also as a place for a grocery store. The changes are made because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9 m x 1.5 m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space. (3) The residents use the remaining 1 m land, carport, and garden at the front for the grocery store business space.</p>
12			<ol style="list-style-type: none"> <li>1. Additional space is provided for the kitchen at the backyard with a size of 2.65 m x 4 m and bathroom with 1.5 m x 1.5 m using tiled floors, gypsum ceiling, and a tin roof with a door to access the meatball stall business space.</li> <li>2. The bathroom position was changed from the initial plan to bedroom 3 with a size of 1.5 m x 1.9 m.</li> <li>3. Additional business space is also provided for a meatball stall in the carport area using gypsum ceiling, hardened floors, and tin roofs.</li> <li>4. The remaining 1 m land in the side yard is used as a place to wash all equipment used in the meatball stall business with hardened floors and without a canopy.</li> <li>5. The park position on the initial plan is used as a terrace with hardened floors but without canopy and fences for children to play and as a parking space for motorbikes.</li> </ol>	<p>This belongs to the severe changes category due to the increase in the function of the building from being an ordinary living place to accommodate the meatball stall. The changes are made by the residents because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9 m x 1.5 m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space. (3) The remaining 1 m land, carport, and garden at the front are also used for meatball stall business.</p>

Respondent	Change plan	Photo changes	Item changes	Analysis
				
13			<ol style="list-style-type: none"> <li>1. Additional space is provided for the kitchen at the backyard with a size of 2.65 m x 4 m using ceramic floors, gypsum ceiling, a tin roof, and walls without paint.</li> <li>2. The bathroom was 1.5 m x 1.5 m in the initial plan but changed to 1.9 m x 1.5 m.</li> <li>3. The floor of the carport, garden, and the remaining 1 m land on the initial plan is tiled, canopied, and fenced to function as a place to sell children's clothes.</li> </ol>	<p>This belongs to the severe changes category due to the increase in the function of the building from being an ordinary living place to accommodate the selling of children's clothes.</p> <p>The changes are made by the occupants because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9 m x 1.5 m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space. (3) The remaining 1 m land, carport, and garden at the front are used by the occupant as a business space to sell children's clothes.</p>

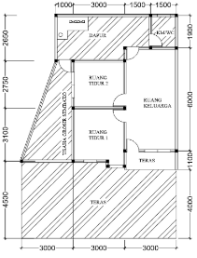

Respondent	Change plan	Photo changes	Item changes	Analysis
14			<ol style="list-style-type: none"> <li>1. Additional space is provided for the kitchen at the backyard with a size of 2.65m x 4m using hardened floors, gypsum ceiling, and a tin roof.</li> <li>2. The bathroom was 1.5m x 1.5m in the initial plan but changed to 1.9m x 1.5m</li> <li>3. The floors of the remaining 1m land and 2m excess from the housing on the original plan are hardened and the gypsum ceiling and tin roof are installed to serve as a place for grocery wholesale business.</li> <li>4. The carport and garden on the original plan are provided with hardened floors, a canopy, and fence and used as a children's playground, motorcycle parking, and a place to put aqua packaging and gas cylinders.</li> </ol>	<p>This belongs to the severe changes category due to the increase in the function of the building from being an ordinary living place to accommodate grocery wholesale business.</p> <p>The changes are made by the occupants because (1) the bathroom in the initial design was too small with 0.4 m land remaining in the backyard and this was utilized to increase the size to 1.9m x 1.5m. (2) There is no provision for a kitchen in the original plan and this makes the residents use the remaining land in the backyard to create the space. (3) The remaining 1m land, carport, and garden at the front are used by the occupant as a business space for grocery wholesale business.</p>

Table 2 which was developed based on Schmidt, et al, (2011) theory shows the transformation of residential space by residents in Grand Permata Residence II housing complex, Deli Serdang Regency is classified into three levels of change which are (1) mild (respondent 5), (2) moderate (respondents 1, 2, 3, 4, and 6), and (3) severe (respondents 7, 8, 9, 10, 11, 12, 13, and 14) (Schmidt, Deamer, and Austin 2011). This is also in line with Raharjo (2010) theory which states that the actions taken by residents to their residence are (1) The actions of residents who make changes/additions to their residence, which are carried out by respondents 1,2,3,4,6,7,8, 9,10,11,12,13,14; (2) The actions of residents who make changes to themselves (adaptation to lack of residence) without modifying their residence as observed with respondent 5 (Raharjo 2010).

The factors associated with the transformation of residential space in the study area were also presented in the table to be in accordance with the theory stated by Mastutie, Supardjo, and Prijadi

(2016). These include (1) Space factor: the need for specific space functions such as the kitchen omitted in the initial plan design and which are very important to residents, thereby, leading to the transformation of the backyard to kitchen space as observed in 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, and 14. (2) Economic factors: Table two shows the transformation form of residential space with different specifications is in accordance with the economic conditions of occupants. This was observed in the living room of Mr. P. Simangunsong, respondent 4, a pedicab driver that adds kitchen space without using ceilings nor painting the walls. (3) Number of family members: The majority of the residents that transformed their residential space have 2 or more family members. (4) Preference: The changes made by the respondents are based on choice or priority as observed in the changing of carport and garden to a business space by 8, 9, 10, 11, 12, 13, and 14. (5) Perception factor: there is a reason for the occupants to transform their living space.

## Conclusion

The findings of this study show that (1) the transformation trend observed in the residential space in subsidized housing unit examined include (a) the addition of a kitchen space using the remaining backyard land in the initial design, (b) movement of bathroom space, and (c) addition of space at the front of the house by converting the carport and garden into a business space. (2) Residential space transformations conducted in the study area were classified into three levels which are (a) mild, (b) moderate, and (c) severe. (3) The factors leading to transformation include (a) occupants' need for certain room functions, (b) economy, (c) number of family members, (d) preference, and (e) perception.

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