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A review of the methods for the assessment of local policy adoption in the field of child vaccination in Japan

Yasuhiro Yamauchi

1 Introduction

This paper reviews the local policy innovation and diffusion models for child vaccination policy in Japan using previous studies as reference. The World Health Organization (WHO) promotes “The Global Vaccine Action Plan” which aims to realize its goal of complete immunization from vaccine-preventable diseases (VPD) by 2020. Although Japan is one of the developed countries, the number and type of target diseases vaccinated by regular inoculation in Japan is smaller than that in western countries alongside the existence of the so called “vaccine gap.” For example, the vaccine for the *Haemophilus influenzae* type B (Hib) infection in Japan was introduced about 20 years later than in the United States. The problem of Mumps hasn’t been resolved as yet either (Saito; 2017).

In Japan, the “Vaccination Law” lays down regulations for the child vaccination policy. The stakeholders responsible for this are cities, towns and villages as they form the first tier of local governments. The routine immunization held under the national program is free for residents. At present, it contains vaccines for Hepatitis B, Hib infection, Pediatric pneumococcal infection, DPT-IPV¹⁾, BCG, Measles-rubella, Varicella (chickenpox), Japanese encephalitis (JE) and the Human papillomavirus infection²⁾ (HPV). On the other hand, vaccinations of Rotavirus, Mumps, influenza, hepatitis A and meningococcal virus are recommended as voluntary inoculation for children by the Japan Pediatric Society. For those vaccines outside of the National Program, some municipal governments provide subsidies to

the residents who get their children vaccinated. However, the ratio of municipal authorities that provide financial support for voluntary vaccination is considerably small. As of 2010, the ratio of municipalities that provide financial support for Mumps is 3.5% (Ministry of Health, Labour and Welfare, 2010). It is important to thoroughly understand the details of what influences policy adoption of municipalities concerned with providing subsidies for vaccinations.

This paper is structured as follows: section 2 provides a general theoretical review about local policy adoption; section 3 presents the assessment methods for local policy adoption in the field of VPD vaccination, and section 4 includes the concluding remarks.

2 Theoretical review about local policy adoption

Many studies of local government policy adoption focus on American states and other regional governments. As Berry and Berry (1990) studied, there are two principal interpretations for policy adoption by a Government; (a) internal determinants and (b) diffusion. Interpretations from 'internal determinants' postulate that the factors leading to policy adoption by a local government are organizational, economic, political, or have social features internal to local governments. In contrast, 'diffusion' interpretations posit that local governments emulate previous policy adoptions by other governments.

Internal determinants

The 'Internal determinants' explanation for policy adoption means that the factors causing a local government to adopt a new policy are economic, political, social etc., of the local authorities. Cyert and March (1963) pointed out, larger organizations are presumed to be more innovative than smaller ones in terms of size and resources. Similarly, Walker (1969) suggested the hypothesis that larger, wealthier, and more economically developed states in the United States were more innovative. The factors causing a local government to adopt a new policy are roughly divided into two types; (1) factors reflecting the motivation to innovate and (2) obstacles in innovation and the resources available to overcome them [Mohr (1969); Berry and Berry (2018)].

(1) The factors reflecting the motivation to innovate local policies, can be further classified into several types. Firstly, the severity of the policy problem can influence the motivation of local government officials to adopt a new policy. Some examples of severe problems are poor economic conditions for mothers' aid programs [Allard (2004)], the level of confidence among a state's population for health insurance reforms [Stream (1999)], and the ratio of state education funding to local funding for systemic reforms [Mintrom and Vergari (1998)]. Secondly, as Mayhew (1974) and Kiewiet and McCubbins (1985) pointed out, the insecurity for re-election and electoral competition influences the motivation of elected officials to adopt a new policy. The more insecure elected officials feel, the more likely they are to adopt a new policy.

(2) Obstacles in local policy innovation and the resources available to overcome them can also be further classified into several types. Firstly, the availability of financial resources can be a prerequisite for local policy innovation. It is the reason behind some new policy programs needing more expenditure. Thus, it is possible to hypothesize that the fiscal soundness of a local government has a positive effect on its tendency to adopt a new policy [Allard (2004); Lowry (2005); Aidt and Jensen (2009)]. In addition, as Daley and Garand (2005) argued, the capacity of an area's economic development, such as the per capita GDP, to finance a new extensive program is also one important factor to innovate. Local governments with high levels of economic development may have a greater probability of adopting policy innovation regardless of the budgeted expenditure for making a new program because of their adaptivity and tolerance for change [Walker (1969)]. Apart from that, other research suggests the importance of the so-called policy entrepreneurs [Kingdon (1984)] and advocacy coalitions [Sabatier and Weible (2007)] who advocate policy innovations.

Policy diffusion

Policy diffusion is defined as "the process by which an innovation is communicated through certain channels overtime among the members of a social system" (Rogers, 1995). Berry and Berry (2018) have pointed out *learning*, *imitation*, *normative pressure*, *competition*, and *coercion* as alternative mechanisms for diffusion.

Learning means that policymakers of one local government obtain information about the success of a policy already adopted by other local governments [Levy (1994), Braun and

Gilardi (2006)]. This success means meeting policy objectives alongside achieving political goals such as being re-elected [Shipan and Volden (2008), Gilardi (2010), Seljan and Weller (2011)]. Some theories assume that getting information about new policies is costly and policymakers are constrained by their ability to analyze information [March and Simon (1993), Meseguer (2005), Weyland (2007)]. Hence, policymakers are assumed to be paying attention to the nearby local governments [Berry and Baybeck (2005)] and jurisdictions they identify as peers [Meseguer (2004)]. Other theories assume that local governments vary in their capacity to learn given their differences in the types and amounts of resources they own [Desmarais, Harden, and Boehmke (2015)].

Imitation means that policymakers in some local governments adopt any policy that other governments have already adopted irrespective of the evaluation and effectiveness of the policy [Simmons, Dobbin, and Garrett (2006), Meseguer (2006), Karch (2007)]. Shipan and Volden (2008) remark that the major difference between learning and imitation is that learning focuses on the *action* (i.e. the policy being adopted by another government), while imitation focuses on the *actor* (i.e. the other government adopting the policy).

Normative pressure means that some local governments buckle under the pressure of adopting a policy only because it is being widely adopted by many other local governments [DiMaggio and Powell (1983), Sugiyama (2012)]. Haas (1992) notes that the role of experts is important for forging a consensus on the norms.

Competition means that some local governments have the motivation to either achieve an economic advantage over other governments or to forbid other governments to secure an advantage over them. Berry and Berry (2018) describe two types of competition mechanisms; (1) location-choice competition and (2) spillover-induced competition. In location-choice competition, local governments attempt to influence the location choices of persons and firms who are in a position to get some advantage in more than one jurisdiction [Meseguer and Gilardi (2009)]. In spillover-induced competition, policy adoption by a local government has a positive or negative external effect on the other local government and changes the net benefit from adopting.

Coercion means that some local governments are forced to adopt a policy when a more powerful government supports it. Some theorists describe two types of coercion mechanisms – horizontal coercion and vertical coercion. In a horizontal coercion, a powerful local

government encourages a weaker local government to adopt a policy. In a vertical coercion, an upper level government such as the national government directs or guides a local government to adopt a policy.

3 Assessment methods for local policy adoption of pediatric vaccination

Figure 1 and Figure 2 display maps which show whether or not the municipalities are subsidizing for receiving the Mumps and Rotavirus vaccination, respectively. Data for making these maps came from the website of a Non-profit Organization (NPO) called “*KNOW★VPD! Protect our Children*” that aims to protect children from VPDs in Japan. This NPO conducted a survey for local municipalities all over Japan in October 2017³⁾. According to the data for the Mumps vaccination (2019), 80 municipalities completely subsidized, 272 municipalities partially subsidized and 617 municipalities didn’t subsidize the vaccine at all. Unidentified municipalities were 772. According to the data for the Rotavirus vaccination (2019), 54 municipalities completely subsidized, 150 municipalities partially subsidized and 687 municipalities didn’t subsidize the vaccine at all. Unidentified municipalities were 850. At a glance, it appears that there is no specific place where the local governments that are subsidizing for Mumps and Rotavirus vaccination are concentrated.

We consider and formulate the hypothesis of policy adoption and diffusion about subsidizing for vaccination of Mumps and Rotavirus as follows:

Firstly, with respect to internal determinants, it seems like the severity of policy problems about Mumps and Rotavirus can have a relationship to subsidies provided by local governments. Of course, Mumps and Rotavirus gastroenteritis are infectious diseases. There is a possibility that the spread of these diseases encourages local governments to offer support in the form of subsidies for all families. The insecurity for reelection and electoral competition can influence the motivation of elected officials to adopt a new vaccination policy. It is believed that subsidization for VPDs is one of the popular policies for the residents. The more insecure elected officials feel, the more likely they are to adopt a new policy for subsidies. As previously mentioned, some new policy programs need high investment, the availability of financial resources for tax could be a prerequisite for local policy adoption.

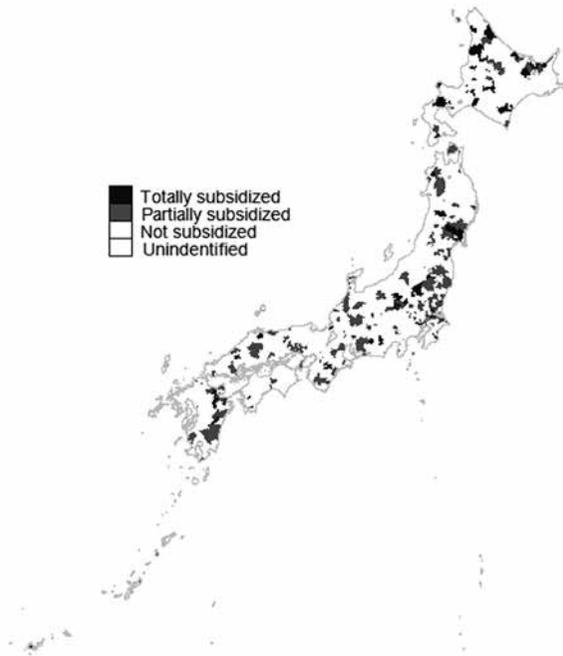


Figure 1 Subsidization of Mumps vaccination by the municipalities

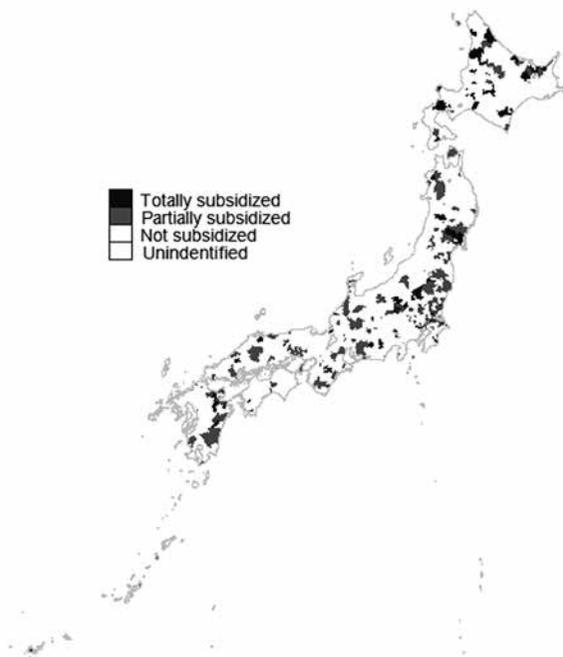


Figure 2 Subsidization of Rotavirus vaccination by the municipalities

Although statistically unclear, the cost for getting vaccinated once for Mumps and Rotavirus is around 5,000 to 15,000 yen. Thus, it is possible that the fiscal soundness of a local government and the abundance of resources for tax will have a positive effect on its tendency to adopt a new vaccination policy. In addition, the so-called policy entrepreneurs and advocacy coalitions for policy innovations can promote the adoption of a new vaccination policy. For example, as mentioned earlier, there is an NPO called “KNOW★VPD! Protect our Children” that aims to protect children from VPDs in Japan. The number of members and the activity level of interest groups can affect the local government’s decisions about a new vaccination policy.

With respect to policy diffusion, as described above, Berry and Berry (2018) have pointed out *learning*, *imitation*, *normative pressure*, *competition* and *coercion* as alternative mechanisms for diffusion. Although *learning* means that policymakers of one local government obtain information about the success of a policy already adopted by other local governments, it is probably hard to observe the success of local vaccination policies in preventing disease. To explain the factors of policy adoptions for vaccination, *imitation* would be more important than *learning*. In addition, local governments can buckle under *normative pressure* as the policy is being widely adopted by many other local governments. But, at the moment, the subsidy policy for Mumps and Rotavirus vaccination is not being adopted widely. As Berry and Berry (2018) showed, local governments may have the motivation to achieve an economic advantage over the other governments. If a location-choice competition exists, local governments would attempt to influence the location choices of persons who want to receive the subsidy for vaccinations. If a spillover-induced competition exists, a vaccination policy adoption by a local government would have a positive externality effect on the other local governments. Bessho and Ibuka (2018) pointed out that interdependency in vaccination policies among the local governments would highly be likely to exist. Theoretically, vaccination policies in the region can be negatively correlated by the policies of neighboring local governments because of the spill-over effects and free-riding motives. Whereas, positive correlation can exist because of policy adoptions with imitation and diffusion among the local governments. Bessho and Ibuka (2018) also show that the provision for vaccination subsidies in Japan is positively correlated with the decisions of neighboring local governments and the correlation is found within the same prefecture i.e. the second tier of local government,

but not with those of surrounding prefectures. As Mumps and Rotavirus vaccinations are voluntary inoculations, it is rather difficult to believe that there is a *Coercion* effect.

4 Concluding remarks

This paper reviewed the local policy innovation and diffusion models for the child vaccination policy in Japan using previous studies as reference. Based on Berry and Berry (1990) study, we considered two principal interpretations for the policy adoption by a government: (1) internal determinants and (2) policy diffusion. Following which, certain factors for policy adoption and policy diffusion in the field of child vaccination policy in Japan were shown through maps indicating whether or not the municipalities would subsidize the Mumps and Rotavirus vaccination. As shown in this review, the study about policy adoption and policy diffusion in the field of child vaccination is particularly rare in Japan. Further progress in this field is expected in the future.

Notes

- 1) DPT-IPV means diphtheria, pertussis, tetanus and inactivated polio vaccine.
- 2) Vaccines for hib infection, pediatric pneumococcal infection, and human papillomavirus infection have been added to the routine immunization since 2013, along with vaccines for hepatitis B since 2016.
- 3) A part of data has been updated after that.

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