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ENHANCING EMERGENCY MEDICAL SERVICES FOR THE ELDERLY: A PARTICIPATORY STRATEGIC PLANNING APPROACH IN MAE PHUN, THAILAND

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Abstract

This study examines the development and evaluation of a participatory strategic plan for managing emergency medical services (EMS) for the elderly in Mae Phun Subdistrict, Thailand. Through a mixed-methods approach, including qualitative and quantitative data, it analyzes the strengths, weaknesses, opportunities, and threats (SWOT) faced by local administrative organizations (LAOs) in managing EMS. The findings reveal the potential of participatory planning to enhance local governance and improve policy implementation, but also highlight challenges of decentralization, resource constraints, and telecommunication limitations. The strategic plan, developed through collaboration with stakeholders, incorporates four key strategies: promoting innovations, enhancing resources, improving environmental management, and strengthening inter-organizational collaboration. The evaluation indicated strong agreement among stakeholders regarding the plan's suitability, utility, efficiency, and effectiveness. The study contributes to understanding local governance and policy formulation in the context of aging populations, offering insights for Southeast Asia and beyond.

Keywords: Participatory Strategic Plan, Local Governance, Emergency Medical Services, Elderly Care, Thailand

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Introduction

Emergencies in the elderly population have become an increasingly critical concern across all sectors, primarily due to the growing proportion of older adults, which is directly associated with a rise in the incidence of emergency situations (United Nations Economic Commission for Europe, 2020). In Thailand, the demand for emergency medical services specifically tailored to the elderly population is also on the rise. In Thailand, out-of-hospital emergencies among the elderly have increased annually. Mortality is notably higher when response times exceed 8 minutes than in cases where the response time is within 8 minutes. (National Institute for Emergency Medicine, 2022)

Effective emergency medical services for the elderly are essential to ensure timely care, stabilize health conditions, and promote recovery. Older adults face heightened risks in emergencies due to reduced independence, multiple chronic illnesses, limited mobility, sensory impairments, physical disabilities, and cognitive decline, all of which hinder communication and response. Although many agencies acknowledge a lead organization for elderly services, they often overlook the need to address the specific vulnerabilities of this population (Shih et al., 2018).

In Uttaradit Province, the 24-hour mortality rate for critically ill emergency patients both in the emergency room and post-admission was 18.51%, falling short of the provincial target of under 12% (Uttaradit Provincial Public Health Office, 2023). This study focuses on Mae Phun Subdistrict, Lablae District, which comprises two local administrative organizations: Huadong Subdistrict Municipality and Mae Phun Subdistrict Administrative Organization. Huadong Municipality currently oversees emergency medical services (EMS) across the subdistrict. Although it was delegated EMS responsibilities under the 1999 Decentralization Act, the municipality continues to face significant challenges due to the central government's failure to transfer necessary personnel and provide adequate budgetary support, resulting in service delivery under constrained conditions. As of August 2023, Mae Phun had a population of 7,559, of whom 2,314 (30.61%) were elderly, making them the largest demographic group (Huadong Subdistrict Municipality, 2023).

The research team, in collaboration with stakeholders in Mae Phun, conducted a SWOT analysis of emergency medical services (EMS) managed by Huadong Subdistrict Municipality. The analysis identified key limitations, including the absence of innovation in elderly emergency care, inadequate funding, personnel, vehicles, and equipment, limited community training, and weak inter-organizational collaboration at the provincial level. Additionally, neither local administrative organization in the subdistrict has established a formal EMS plan. The current system also lacks community participation in planning, implementation, and evaluation processes. Such participation is critical for developing context-specific, data-driven plans aligned with local needs, thereby increasing the likelihood of municipal council approval and budget allocation to support effective and sustainable EMS delivery.

This study aims to enhance the capacity to manage emergencies involving the elderly through the development of a Participatory Strategic Plan for Emergency Medical Services. The plan seeks to enable effective assistance for the elderly in Mae Phun, reducing the severity, disability, and mortality associated with such emergencies. It may also serve as a model for local administrative organizations across ASEAN in preventing and managing emergency situations involving elderly populations.

Literature Review

Participatory strategic planning is vital at the local government level, especially for local administrative organizations (LAOs) in Thailand. These organizations are increasingly required to engage citizens and stakeholders in policymaking, particularly as they face rising demands to provide services for an expanding elderly population. Wolf & Amirkhanyan (2010)

highlighted the fiscal and service-related implications of demographic shifts, noting that an aging population exerts greater influence on policymaking and drives demand for age-responsive welfare services. Encouraging the active participation of the entire population reflects the democratic duty of locally elected officials to respond to community needs. Simey (1988) introduced the concept of active accountability, asserting that democracy requires ongoing civic engagement, not merely periodic elections. Elected officials must serve as stewards of public interest and facilitators of trust between citizens and the state.

In the Thai context, public participation is essential for ensuring that strategic development plans address local needs. This aligns with Mintzberg's (1994) view that planners should support the strategy-making process while empowering local actors, especially within decentralized systems. Such inclusive processes lead to more responsive plans. Poister & Streib (2005) emphasized that successful strategic planning depends on a clear vision, alignment with long-term community goals, and broad stakeholder involvement. However, Thailand's persistent centralization undermines local autonomy. Unger & Mahakanjana (2016) argue that despite decentralization efforts, weak civil society and dominant central structures limit genuine local self-governance. As a result, citizen participation is often confined within centrally designed frameworks.

To promote meaningful civic engagement, Jones & Stewart (2012) stressed the importance of representative local democracy through sustained involvement. Elections alone are insufficient; mechanisms for participatory governance and public accountability are essential. Supporting this, Sapkota et al. (2024) demonstrated that Participatory Policy Analysis (PPA), when inclusive and context-sensitive, can effectively translate evidence into equitable policy outcomes. In developing localized strategies, SWOT analysis remains a critical tool. Holt & Wolff (2015) noted its utility in identifying strategic directions across all stages, while Gürel & Tat (2017) emphasized its integrative role in aligning internal and external factors to support effective decision-making.

In conclusion, while decentralization is a positive development, the advancement of grassroots democracy hinges on empowering citizens as active participants. Fostering civic engagement can enhance democratic governance and lead to more inclusive and sustainable local development.

Research Methodology

This article is part of the project "Innovative Model of Emergency Management for Aging People by Local Administration Organizations in Uttaradit Province." The study employed a mixed-methods approach in Mae Phun Subdistrict, Laplae District, Uttaradit Province. Ethical approval was granted by Naresuan University's Human Research Ethics Committee (Permit No. COA 0011/2024), and all participants provided written informed consent.

Population and Sample

The study involved two distinct participant groups, selected using purposive sampling:

1) For Strategic Plan Development: 40 individuals were selected from Mae Phun. These included personnel from the subdistrict, representatives from partner agencies providing emergency support to the elderly (at subdistrict, district, and provincial levels), and individuals meeting the following criteria: (1) holding a leadership position; (2) having direct EMS responsibilities; (3) possessing relevant EMS knowledge and experience; and (4) representing diverse community perspectives.

2) For Strategic Plan Evaluation: 20 representatives from network partners involved in emergency medical services at the sub-district, district, and provincial levels were selected based on expertise in EMS planning and implementation (minimum 5 years' experience).

Data Collection

The research utilized a combination of qualitative and quantitative data collection methods:

- 1) Structured Group Interviews: A structured interview guide, informed by relevant literature and community SWOT analysis, explored strengths, weaknesses, opportunities, and threats related to EMS management for the elderly in Mae Phun.
- 2) Focus Group Discussions (FGDs): Findings from the structured interviews informed the FGDs, which aimed to collaboratively develop a strategic plan for elderly EMS.
- 3) Questionnaires: For the strategic plan evaluation, participants completed a questionnaire assessing opinions on the plan's appropriateness, utility, efficiency, and effectiveness, using a 4-point Likert scale.

Data Analysis

Data were analyzed using the following methods:

- 1) Qualitative Data: Qualitative data from structured interviews and FGDs were systematically organized and analyzed using content analysis, combining theory-driven and inductive typological approaches. Data quality was ensured through expert review and methodological triangulation.
- 2) Quantitative Data: Quantitative data from the evaluation questionnaires were assessed using descriptive statistics, including frequency distribution, mean, and standard deviation (S.D.). The instrument's (questionnaire) quality was verified through content validity using the Index of Item-Objective Congruence (IOC), evaluated by five experts. Reliability analysis via Cronbach's alpha yielded an IOC value of 0.89, indicating high content validity.

Research Findings

Community SWOT Analysis of EMS Management by Local Administrative Organizations

A community-based SWOT analysis revealed key factors shaping emergency medical service (EMS) management in Mae Phun. A primary strength lies in the Health and Environment Division of Huadong Municipality, which serves as the main agency responsible for public health, environmental management, and EMS within the subdistrict. Its efforts are supported by two health-promoting hospitals. Furthermore, Huadong Municipality acts as the central body overseeing EMS operations in the subdistrict and is officially recognized as a basic-level EMS unit under national regulations. The Director of the Health and Environment Division provides oversight, ensuring organized and continuous management of EMS activities.

However, the analysis also revealed several weaknesses. Regarding EMS management, while the Health and Environment Division of Huadong Municipality is the primary unit, its broad scope of duties – also encompassing sanitation, public health, environmental management, and health promotion – limits the efficiency of EMS administration. In terms of personnel, Huadong Subdistrict has only six EMS personnel as of August 2024, falling short of the nine required for 24-hour coverage according to EMS Committee standards. The emergency medical services information management system is limited to basic summary records from the emergency rescue center, lacking comprehensive planning and data integration. Budget constraints represent a significant challenge, as Huadong Municipality faces limitations in hiring additional EMS personnel, with nearly 40% of its annual budget already allocated to personnel costs, reaching the statutory limit. In regard to resources, the municipality possesses only one Basic Life Support (BLS) ambulance, used for both emergency response and patient transport. During certain emergencies, this single vehicle is unavailable, necessitating assistance from neighboring rescue units.

Opportunities for improvement exist within the framework of national policies and systems. The National Institute for Emergency Medicine and the EMS Committee provide national guidelines and standards, including the Fourth National Emergency Medical Plan (2023-2027), to guide local EMS operations. The 1669 hotline ensures nationwide coverage, coordinating rescue teams to respond and transport patients to hospitals. Support networks are also crucial,

including the Uttaradit Charity Foundation and Wat Mon Mai Rescue Association, supporting operations; Laplae Hospital, providing annual EMS training; and the Provincial Public Health Office, offering first aid and EMR training.

Despite these opportunities, several threats exist. Unstable telecommunication signals in Mae Phun cause communication difficulties within villages, with radio communication providing only a limited alternative with small coverage areas. Previous attempts to expand coverage with signal towers were discontinued. The transfer of responsibilities to local administrative organizations under the 1999 Decentralization Act has not been accompanied by sufficient personnel and budget. Furthermore, delays in the 2024 fiscal budget review have postponed fund disbursement, impacting operations of local organizations, including emergency medical services in Huadong Municipality.

This SWOT analysis revealed that while Huadong Municipality has a standardized EMS system, it faces challenges in securing sufficient funding and personnel. This highlights the ongoing tensions between decentralization and resource constraints in Thailand, where local governments are often tasked with providing services without adequate financial support from the central government.

Development of the Strategic Plan for Emergency Medical Management for the Elderly in Mae Phun Sub-District

The research team and stakeholders used Community SWOT to develop an EMS plan for the elderly, aligning with national laws, policies, and local needs under LAO responsibility and EMS Committee coordination.

Table 1 A strategic plan for managing emergency medical services (EMS) for the elderly in Mae Phun

Vision					
Mae Phun is a safe community for the elderly, supported by innovative emergency management practices that are standardized and comprehensive, implemented by the local administrative organization and its network of stakeholders.					
Framework of Vision	1) Mae Phun Sub-district will establish an equitable and comprehensive emergency medical system tailored to the needs of the elderly population. 2) Mae Phun Sub-district will be developed into a secure and elderly-friendly community, guided by innovative emergency management practices and supported through the collaborative efforts of local governance structures and network partners.				
Mission	1) To develop innovative approaches that align the emergency management system in Mae Phun Sub-district with nationally and internationally recognized y 2) To improve the efficiency and allocation of resources, including budgetary systems, personnel, and emergency services for the elderly. 3) To promote effective environmental management strategies that enhance the overall responsiveness and performance of emergency medical services for the elderly. 4) To strengthen community capacity by enhancing the local knowledge and skills in providing emergency assistance to elderly individuals, thereby fostering a 5) To reinforce interorganization al collaboration among local governmental bodies in Uttaradit Province and key network partners to advance the quality and accessibility of emergency medical services for the elderly in				

	<p>standards for vehicles, emergency and life-medical saving services for equipment, to meet the specific needs of elderly emergency medical care in Mae Phun Sub-district.</p>	<p>culture of Mae Phun Sub-safety and preparedness.</p>
Objective	To develop Mae Phun Sub-district into a model of a safe and innovative community for the elderly by implementing an effective and efficient emergency health management system, with the ultimate aim of minimizing the severity, disability, and mortality associated with emergency medical conditions.	
Main Goal	Elderly residents in Mae Phun Sub-district will be empowered to respond effectively to emergency situations, supported by access to high-quality and safe healthcare services designed to reduce the severity, disability, and mortality associated with emergency medical events.	
Strategic Issues (4)	<p>Strategy 1: Development and Promotion of Innovations to Support the Emergency Management System for the Elderly in Mae Phun Sub-district</p> <p>Tactics</p> <ul style="list-style-type: none">1) Promote and drive the strategic implementation of emergency medical management for the elderly in Mae Phun Sub-district, Lablae District, Uttaradit Province, to achieve established objectives.2) Develop and integrate innovative systems and programs to enhance the capacity of emergency management for the elderly.3) Standardize emergency medical operations and integrate them with networks across public and private sectors to create a seamless emergency medical ecosystem.4) Promote a participatory and safety-oriented community culture, which strengthens the local emergency management ecosystem for the elderly. <p>Strategy 2: Development and Enhancement of the Budget, Personnel, Vehicles, and Life-saving Equipment Systems for Emergency Medical Services for the Elderly in Mae Phun Sub-district</p> <p>Tactics</p> <ul style="list-style-type: none">1) Improve the efficiency of emergency medical service budgeting, personnel compensation, and emergency medical staff contracting for the elderly.2) Train and develop the capacity of emergency medical staff in Mae Phun Sub-district.3) Facilitate the procurement of vehicles to support emergency medical services for the elderly.4) Procure life-saving equipment and support operational costs, such as fuel and maintenance for emergency services.	

Strategy 3: Promoting Environmental Management for Emergency Medical Operations for the Elderly in Mae Phun Sub-district

Tactics

- 1) Develop policies that promote an appropriate environment for emergency medical operations for the elderly.
- 2) Appoint committees, operational teams, and evaluation teams to oversee emergency medical services for the elderly.
- 3) Create risk assessment plans and safety, occupational health, and environmental control procedures for emergency operations.
- 4) Communicate the risks associated with emergency health situations to agencies and the public to enhance preparedness and response.

Strategy 4: Strengthening Collaboration Between Local Government Organizations at the Provincial Level in Uttaradit and Network Partners for Emergency Medical Operations for the Elderly in Mae Phun Sub-district

Tactics

- 1) Build and strengthen cooperation between local government organizations at the provincial level and network partners in the implementation of emergency medical services for the elderly.
- 2) Improve the effectiveness of collaboration between local government organizations and network partners in carrying out emergency medical operations.

Evaluation of the Appropriateness of the Strategic Plan for Managing Emergency Medical Services for the Elderly in Mae Phun

The evaluation of stakeholder opinions regarding the strategic plan's development for managing emergency medical services for the elderly in Mae Phun was categorized into four key aspects: suitability, utility, efficiency, and effectiveness. As detailed in Table 2, the overall evaluation revealed a consensus of agreement, with opinions on the strategic plan consistently at the highest levels. Stakeholders generally agreed on the plan's suitability, utility, efficiency, and effectiveness, suggesting that participatory planning serves as a valuable tool for building consensus and promoting local ownership of policy initiatives. This positive evaluation underscores the potential of participatory planning in shaping effective and locally supported policies. The strategic plan developed for managing emergency medical services for the elderly in Mae Phun exemplifies Thailand's participatory local planning process, a process also depicted in Figure 1. Further, Figure 1 illustrates that this strategic plan reflects Thailand's broader participatory approach to local planning, aligning with global frameworks promoting decentralized and community-based health service development. In this context, the promotion of decentralization significantly contributes to the advancement of local-level democracy by empowering local communities to shape their own healthcare solutions.

Table 2 Opinions on the strategic plan for managing emergency medical services for the elderly in Mae Phun, considering all relevant aspects.

Items	\bar{x}	S.D.	Opinion Level	No.
Suitability	3.55	0.60	Strongly agree	3
Utility	3.68	0.49	Strongly agree	1
Efficiency	3.65	0.51	Strongly agree	2
Effectiveness	3.52	0.58	Strongly agree	4
Total	3.60	0.55	Strongly agree	

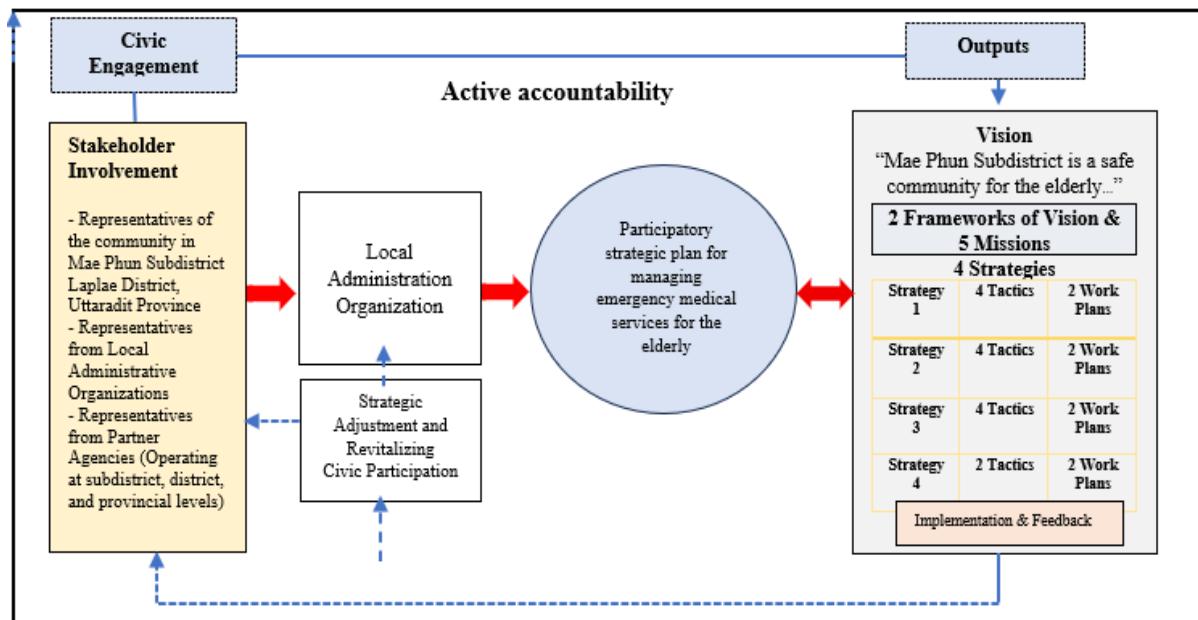


Figure 1 A participatory approach to developing a strategic plan for managing emergency medical services for the elderly at the local level in Thailand based on a case study of Mae Phun

Conclusion and Discussion

This research demonstrates that community analysis, as emphasized by Gürel & Tat (2017), enabled the local administrative organizations in Mae Phun to develop appropriate strategies and plans. This is evidenced by the strategies outlined in the Strategic Plan for Managing Emergency Medical Services for the Elderly in Mae Phun, which directly contributed to the improvement of EMS management by the local administrative bodies. The strategic plan's development relied on a participatory process involving all stakeholders, aligning with Mintzberg's (1994) emphasis on strategy-making that centers on the process itself, rather than a top-down imposition.

The resulting plan, developed through comprehensive community analysis—in line with the approach of Holt & Wolff (2015) regarding SWOT analysis—provides valuable insights into new projects and problem-solving, identifying opportunities and mitigating potential threats. Furthermore, each strategy aligns with the responsibilities of local administrative organizations in emergency medical services, as outlined in the Emergency Medical Services Plan and the Decentralization Act of 1999.

Public participation plays a vital role in aligning strategic development plans with local needs, as stressed by both Mintzberg (1994) and Poister & Streib (2005), who emphasized the importance of a community-aligned vision. However, persistent centralization, weak civil society, and strong central influence limit citizen engagement, as argued by Unger & Mahakanjana (2016). This reinforces Jones & Stewart's (2012) call for representative local democracy and mechanisms that foster meaningful public involvement in policy development and oversight.

The strategic plan developed by the Huadong Municipality and Mae Phun Subdistrict Administrative Organization, which incorporates four strategies developed through a participatory process with stakeholders from all sectors, demonstrates a model of Participatory Policy Analysis (PPA) that is both comprehensive and contextually sensitive, as suggested by Sapkota et al. (2024). In this way, the strategic plan for managing emergency medical services for the elderly in Mae Phun represents a concrete step toward fostering local democracy.

The findings contribute to the growing body of literature on local governance in Southeast Asia. While participatory planning improves policy outcomes in some contexts, Sapkota et al. (2024) demonstrate that PPA, when inclusive and context-sensitive, can effectively translate evidence into equitable policy outcomes. This study indicates that success depends on the capacity of local administrative organizations, the level of stakeholder engagement, and resource availability. The case of Mae Phun highlights the challenges of implementing decentralized policies in a rural context with limited resources. Furthermore, the study underscores the importance of addressing the specific needs of vulnerable populations, such as the elderly, in policy planning and implementation.

Policy Recommendations and Research Limitations

This study examined the development and evaluation of a participatory strategic plan for EMS for the elderly in Mae Phun, Thailand, and suggests that participatory planning can enhance local governance and improve policy implementation. However, the focus on a single case limits the generalizability of the findings. Future research should examine the effectiveness of participatory planning for EMS in other contexts and explore factors contributing to its success or failure. Additional research is needed to assess the long-term impact of the strategic plan on the health and well-being of the elderly in Mae Phun. This study contributes to the understanding of local governance and policy implementation in the context of aging populations in Southeast Asia and provides insights that may be relevant to other countries facing similar challenges.

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References

Decentralization Plan and Process Act, 1999.

Gürel, E., & Tat, M. (2017). SWOT analysis: A theoretical review. *The Journal of International Social Research, 10*, 994-1006.

Holt, C., & Wolff, T. (2015). *Developing a framework for community action: A guidebook*. Kansas: University of Kansas.

Huadong Subdistrict Municipality. (2023). *Local development plan, 2023-2027*. Uttaradit: Huadong Subdistrict Municipality.

Jones, G., & Stewart, J. (2012). Local government: The past, the present, and the future. *Public Policy and Administration, 27*(4), 346-367.

Mintzberg, H. (1994). The fall and rise of strategic planning. *Harvard Business Review, 72*, 107-114.

National Institute for Emergency Medicine. (2022). *Global and Thailand situation and trends in health and emergency medicine*. Retrieved from www.niems.go.th/1/UploadAttachFile/2022/EBook/20220208161448.pdf.

Poister, T., & Streib, G. (2005). Elements of strategic planning and management in municipal government: Status after two decades. *Public Administration Review, 65*(1), 45-56.

Sapkota, S., Rushton, S., van Teijlingen, E., Subedi, M., Balen, J., Guatam, S., ... & Marahatta, S. (2024). Participatory policy analysis in health policy and systems research: reflections from a study in Nepal. *Health Research Policy and Systems, 22*, 7.

Shih, R., Acosta, J., Chen, E., Carbone, E., Xenakis, L., Adamson, D., & Chandra, A. (2018). Improving Disaster Resilience Among Older Adults: Insights from Public Health Departments and Aging-in-Place Efforts. *Rand Health Quarterly, 8*(1), 3.

Simey, M. (1988). *Democracy rediscovered: A study in police accountability*. London: Pluto Press.

Unger, D., & Mahakanjana, C. (2016). Decentralization in Thailand. *Journal of Southeast Asian Economies*, 33(2), 172-187.

United Nations Economic Commission for Europe. (2020). *Older persons in emergency situations*. Geneva: United Nations Economic Commission for Europe.

Uttaradit Provincial Public Health Office. (2023). *Population classified by sex and age group, 2023*. Uttaradit: Uttaradit Provincial Public Health Office.

Wolf, D., & Amirkhanyan, A. (2010). Demographic change and its public sector consequences. *Public Administration Review*, 70(S1), S12-S23.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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