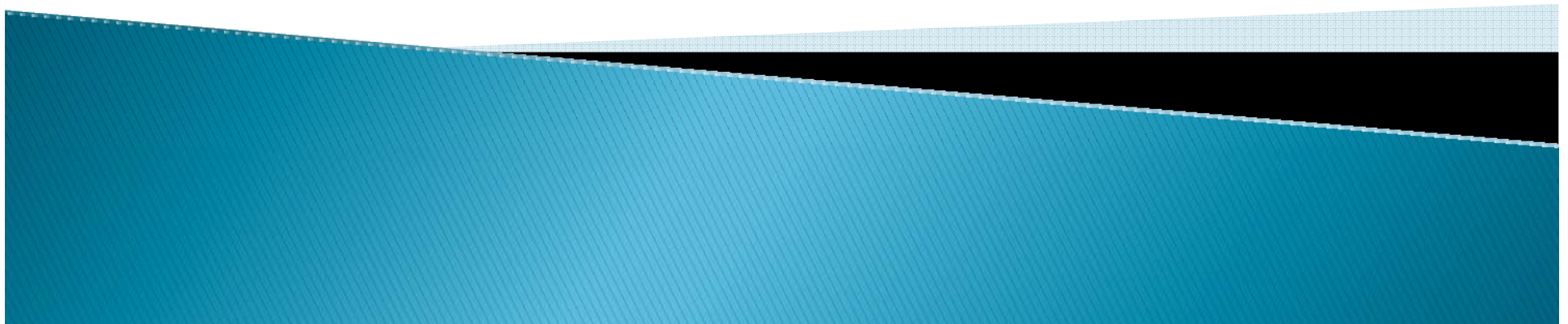


# The Role of National Universities and Emerging Issues

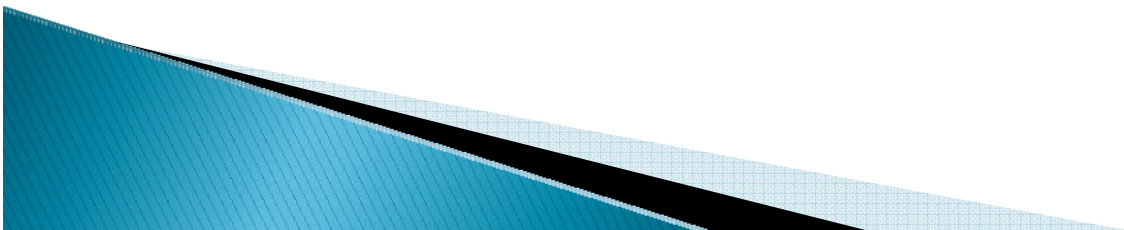
- A contribution to discussion on operating expense  
subsidy allocation methods –

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(Provisional text – not for citation)



# Presentation Structure

- ▶ 1. Preliminary remarks
- ▶ 2. University functions: a conceptual framework
- ▶ 3. Functions of national universities
- ▶ 4. Functions of national universities by university type
- ▶ 5. Functions of national universities by prefecture
- ▶ 6. Functions of national universities: specific examples
- ▶ 7. Concluding comments



# Preliminary Remarks

- ▶ “We are beginning to experience a substantial shift in the power relationship between ‘government’ and ‘market’. What kind of change is afoot? It is not yet possible to delineate the exact form which the new relationship will take, but the attitudinal shift is more significant than physical manifestations of change. In speculative terms, there has already been a definite shift of orientation to emphasize market over government. This change in perception is being given precedence over attempts to get to the root of practical issues. As a result, decision-making at the policy level appears to proceed without any firm understanding of actual conditions.”  
(Masakazu Yano, *Daigaku kaikaku no kaizu [Charting university reform]*, 2005, p.12)
- ▶ Is debate over the method for allocation of operating expense subsidies really grounded in understanding of the actual roles (termed “functions” in this presentation) played by national universities?

## 2. University functions: a conceptual framework

### 2.1 Outline

- ▶ The functions of a university according to Perkins (1966)
  - (1) Acquisition of knowledge (research function)
  - (2) Transmission of knowledge (education function)
  - (3) Application of knowledge (public service function) → university extension function
  - “Taken separately the three aspects of knowledge lead nowhere; together they can and have produced an explosion that has changed the world.”
    - James A. Perkins, *The University in Transition*, Princeton University Press, 1966, pp.7-8.
  - In recent years the third function often tends to be referred to as “social contribution” or “social service.” It is, however, the first and second functions that constitute a university’s major form of “social contribution,” “social service” and “public service.” Thus, I refer to the third function instead as the “university extension function.”

# 2. University functions: a conceptual framework

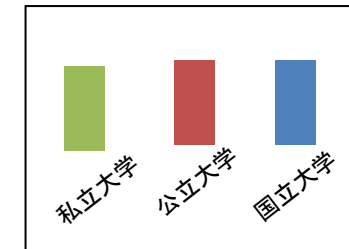
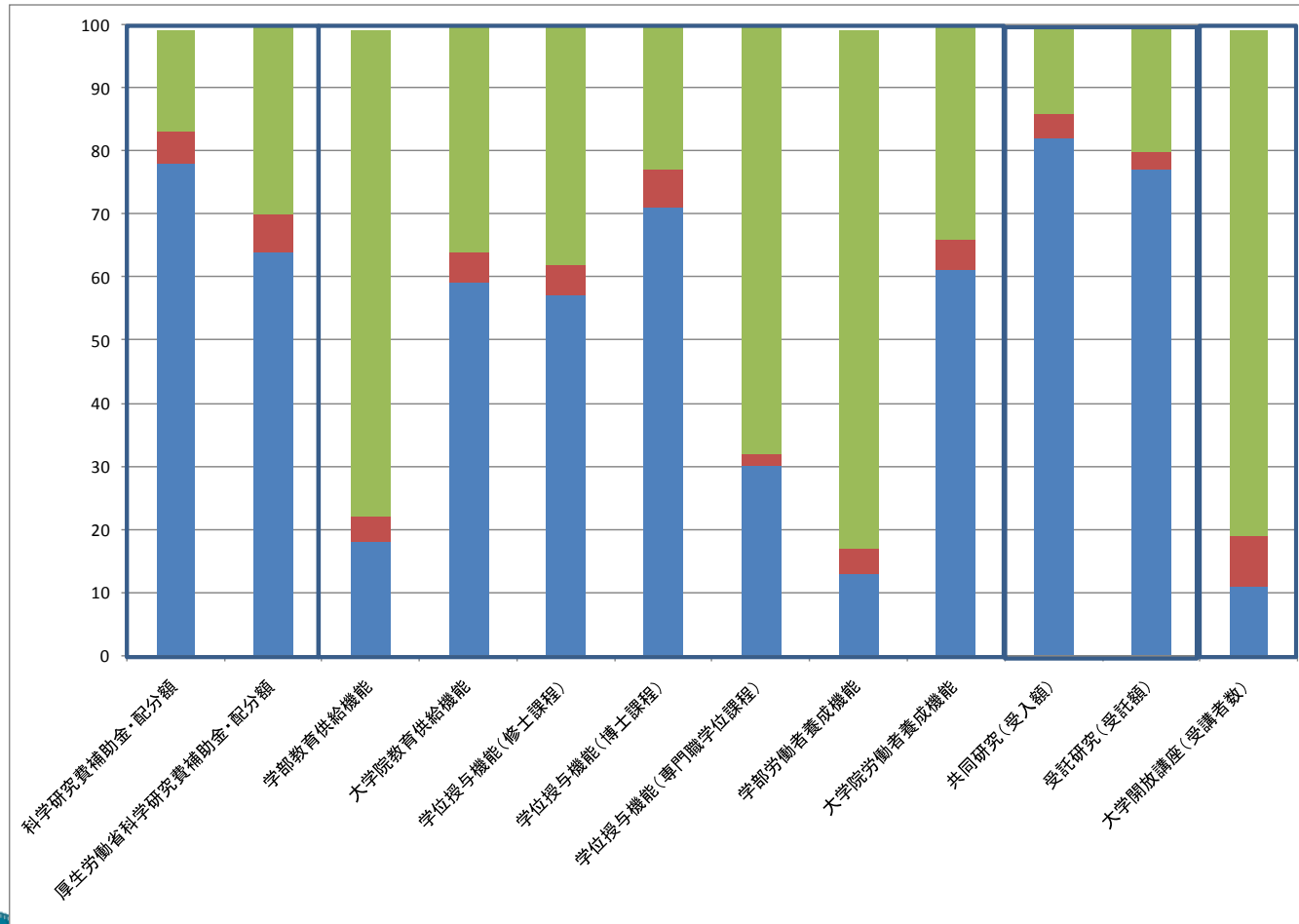
## 2.2 Details

### ▶ Three functions

- (1) Research function (acquisition of knowledge)
  - Basic research function / applied research function (Grants-in-Aid for Scientific Research, Special Coordination Funds for Promoting Science and Technology, COE, Ministry of Health, Labour and Welfare Grants-in-Aid for Scientific Research, etc.)
    - Specialist fields
- (2) Education function (transmission of knowledge)
  - Undergraduate education / graduate education function (supply of educational opportunities, conferral of degrees, human resource development)
    - Specialist fields
    - Traditional students / non-traditional students
- (3) University extension function (application of knowledge)
  - Research-based university extension function (joint research, commissioned research, inventions, patents, venture creation, etc.)
  - Education-based university extension function (guest lecturing in high schools, university extension courses, etc.)
  - Integrated university extension function (affiliated hospitals, affiliated schools, membership of governmental committees, provision of extended access to facilities, etc.)
    - Koike ('Daigaku to shakai koken [Universities and social contribution]' in Yoshihito Yasuhara, Yutaka Otsuka and Takashi Hata, *Daigaku to shakai [Universities and society]*, Society for the Promotion of the Open University of Japan, 2008) identifies five types of university extension function: (1) extension of the regular curriculum, (2) functional extension, (3) projects for human resource provision, (4) provision of extended access to facilities, and (5) collaboration between industry, academia and government. In this presentation, (1) will be incorporated into the education function (non-traditional students), (2) into education-based university extension, (3) and (4) into integrated university extension, and (5) into research-based university extension.

### 3. Functions of national universities

#### 3.1 Share of functions by mode of establishment



# 3. Functions of national universities

## 3.1 Share of functions by mode of establishment

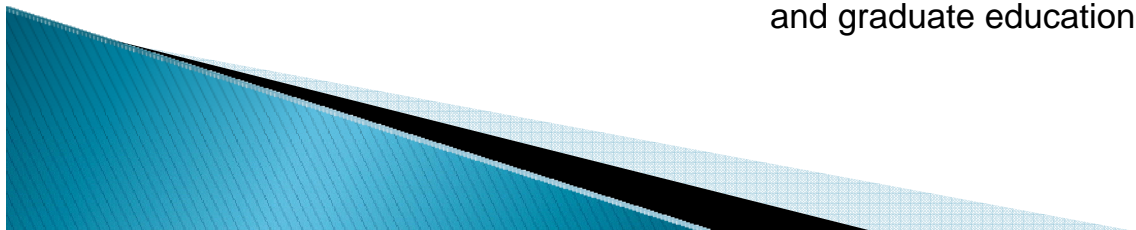
- ▶ Research function
  - Research function (Grants-in-Aid for Scientific Research, Ministry of Health, Welfare and Labour Grants-in-Aid for Scientific Research)
    - National universities account for 60-80% of this function
- ▶ Education function
  - ▶ Undergraduate education function
  - ▶ Private universities account for just under 80%
  - ▶ Graduate education function
  - ▶ National universities account for around 60%
    - ▶ In doctoral programs, national universities account for around 70%
- ▶ University extension function
  - ▶ Research-based university extension function
  - ▶ National universities account for around 80%
  - ▶ Education-based university extension function
  - ▶ Private universities account for around 80%

▶ Research function / graduate education function / research-based university extension function → centered on national universities

▶ Undergraduate education function / education-based university extension function → centered on private universities



In quantitative terms, national universities have a small share in the undergraduate education and education-based university extension functions; their engagement is qualitatively distinctive, however, in that these functions are linked with research and research-based university extension functions and graduate education functions.



## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities

- ▶ Classification of universities used in the following discussion (based on historical development and faculty makeup)

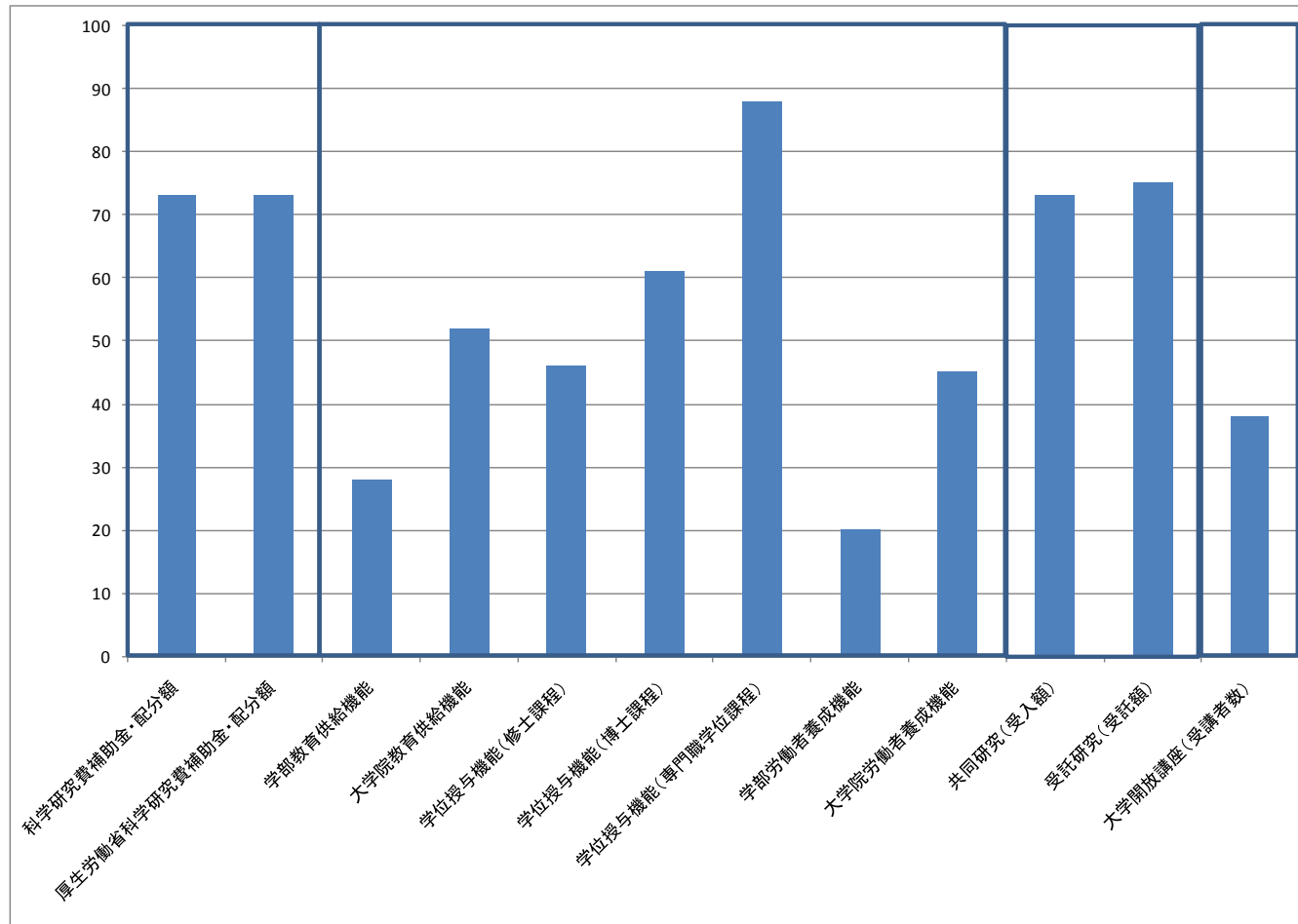
総合・旧帝大	北海道	東北	東京	名古屋	京都	大阪	九州
総合・旧官大[文・理]	筑波	神戸	広島				
総合・旧官大[医あり]	千葉	新潟	金沢	岡山	長崎	熊本	
総合・新制大[医あり]	群馬 愛媛	信州 佐賀	富山 大分	岐阜 鹿児島	島根 琉球	山口	香川
複合・新制大[医あり]	弘前 徳島	秋田 高知	山形 宮崎	福井	山梨	三重	鳥取
複合・新制大[医なし]	岩手 滋賀	福島 和歌山	茨城	宇都宮	埼玉	横浜国立	静岡
単科・旧官大	東京医科歯科	東京工業	一橋				
単科・旧女高師	お茶の水女子	奈良女子					
単科・旧専門[文]	小樽商科	東京外国語	東京芸術	大阪外国語			
単科・旧専門[教]	北海道教育 福岡教育	宮城教育	東京学芸	愛知教育	京都教育	大阪教育	奈良教育
単科・旧専門[工]	室蘭工業	東京農工	電気通信	名古屋工業	京都工芸繊維	九州工業	
単科・旧専門[農]	帯広畜産						
単科・旧専門[海]	東京海洋						
単科・新設大[医]	旭川医科	浜松医科	滋賀医科				
単科・新設大[教]	上越教育	兵庫教育	鳴門教育	鹿屋体育			
単科・新設大[工]	北見工業	長岡技術科学	豊橋技術科学	筑波技術大学			
単科・大学院大学	政策研究	北陸先端	奈良先端	総合研究			

- ▶ Nationally-oriented universities
  - Former imperial universities, Tsukuba, Kobe, Hiroshima, Tokyo Medical and Dental, Tokyo Institute of Technology, Hitotsubashi
- ▶ Regionally-oriented universities
  - All other universities



## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (overall)



Note: Shares indicated above are those held by nationally-oriented universities

## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (overall)

- ▶ Research function
    - Research function
      - Nationally-oriented universities account for around 70%
  - ▶ Education function
    - ▶ Undergraduate education function
    - ▶ Regionally-oriented universities account for around 70%
    - ▶ Graduate education function
    - ▶ Regionally-oriented universities account for around 50%
      - ▶ In master's programs, regionally-oriented universities account for around 50%
      - ▶ In doctoral programs, nationally-oriented universities account for around 60%
  - ▶ University extension function
    - ▶ Research-based university extension function
    - ▶ Nationally-oriented universities account for around 70%
    - ▶ Education-based university extension function
    - ▶ Regionally-oriented universities account for around 60%
- 
- ▶ Research function / research-based university extension function → centered on nationally-oriented universities
  - ▶ Undergraduate education function / education-based university extension function → centered on regionally-oriented universities
- ↓
- ▶ Graduate education function → shared

## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (specifics)

- ▶ Research function by specialist field
  - Research function (production of academic papers/articles disseminated internationally)
    - Papers in Pharmacy
      - Regionally-oriented universities 52%
      - Comprehensive / former state-run universities [with faculties of medicine] 15%; comprehensive / new-system universities [with faculties of medicine] 14%; multi-discipline / new-system universities [with faculties of medicine] 11%
    - Papers in Agriculture
      - Regionally-oriented universities 51%
      - Comprehensive / new-system universities [with faculties of medicine] 15%; multi-discipline / new-system universities [with faculties of medicine] 11%
    - Papers in Clinical Medicine
      - Regionally-oriented universities 51%
      - Comprehensive / former state-run universities [with faculties of medicine] 17%; comprehensive / new-system universities [with faculties of medicine] 17%; multi-discipline / new-system universities [with faculties of medicine] 13%
    - Papers in Computer Science
      - Regionally-oriented universities 44%
      - Single-discipline / former specialist universities [engineering] 13%

## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (specifics) (2)

- ▶ Education function (transmission of knowledge)
  - Graduate education function
    - Conferral of master's degrees
      - Domestic Science
        - Former imperial universities 0%
        - Single-discipline / former women's higher normal schools 100%
      - Arts
        - Former imperial universities 0%
        - Single-discipline / former specialist universities [humanities] 79%
      - Education
        - Former imperial universities 6%
        - single-discipline / former specialist universities [education] 24%; single-discipline / newly-established universities [education] 17%
      - Engineering
        - Former imperial universities 28%
        - Comprehensive / comprehensive / new-system universities [with faculties of medicine] 12%; multi-discipline / new-system universities [without faculties of medicine] 10%; single-discipline / former specialist universities [engineering] 13%

## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (specifics) (2)

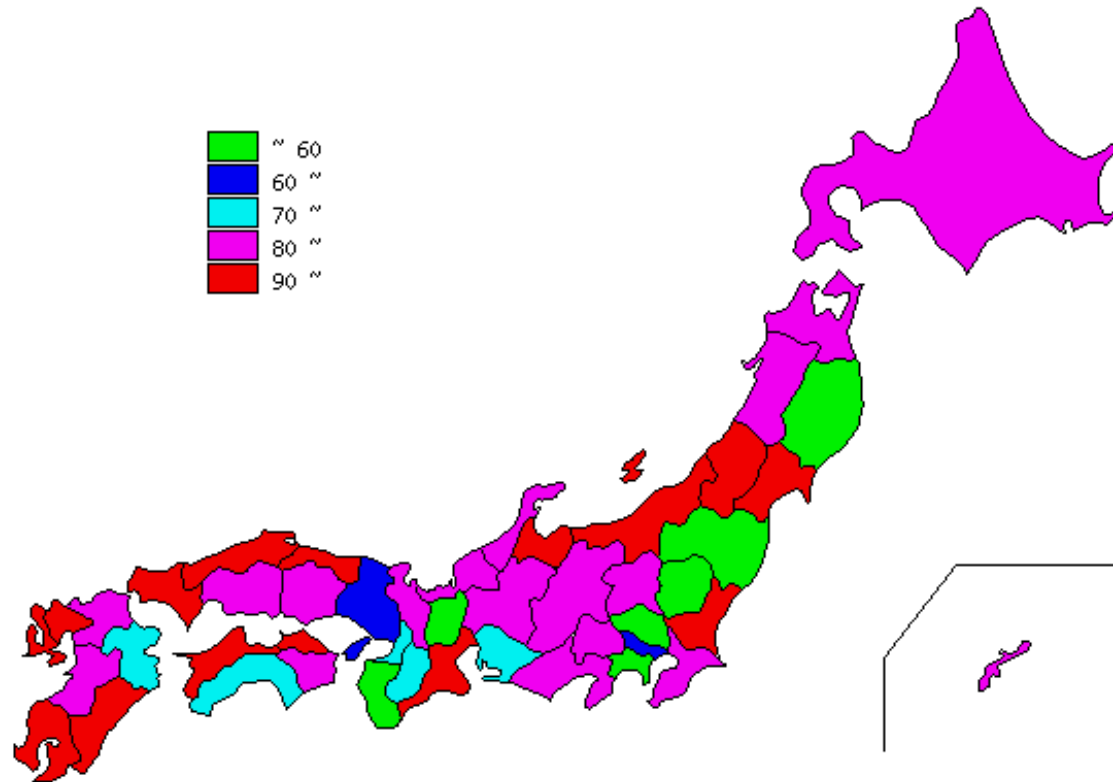
- ▶ Education function (transmission of knowledge)
  - Graduate education function
    - Conferral of doctoral degrees
      - Domestic Science
        - Former imperial universities 0%
        - Single-discipline / former women's higher normal schools 100%
      - Arts
        - Former imperial universities 0%
        - Single-discipline / former specialist universities [humanities] 78%
      - Education
        - Former imperial universities 34%
        - Single-discipline / former specialist universities [education] 14%; single-discipline / newly-established universities [education] 12%
      - Public Health
        - Former imperial universities 38%
        - Comprehensive / former state-run universities [with faculties of medicine] 20%; comprehensive / new-system universities [with faculties of medicine] 12%; multi-discipline / new-system universities [with faculties of medicine] 12%

## 4. Functions of national universities by university type

### 4.1 Roles played by regionally-oriented national universities (specifics) (2)

- ▶ Professional human resources development function
  - Scientific researchers
    - National universities 85%
    - Regionally-oriented universities 45%
  - Medical practitioners
    - National universities 70%
    - Regionally-oriented universities 52%
  - Elementary / junior high school teachers
    - National universities 63% / 56%
    - Regionally-oriented universities 96% / 92%

## 5. Functions of national universities by prefecture Share of Grants-in-Aid for Scientific Research



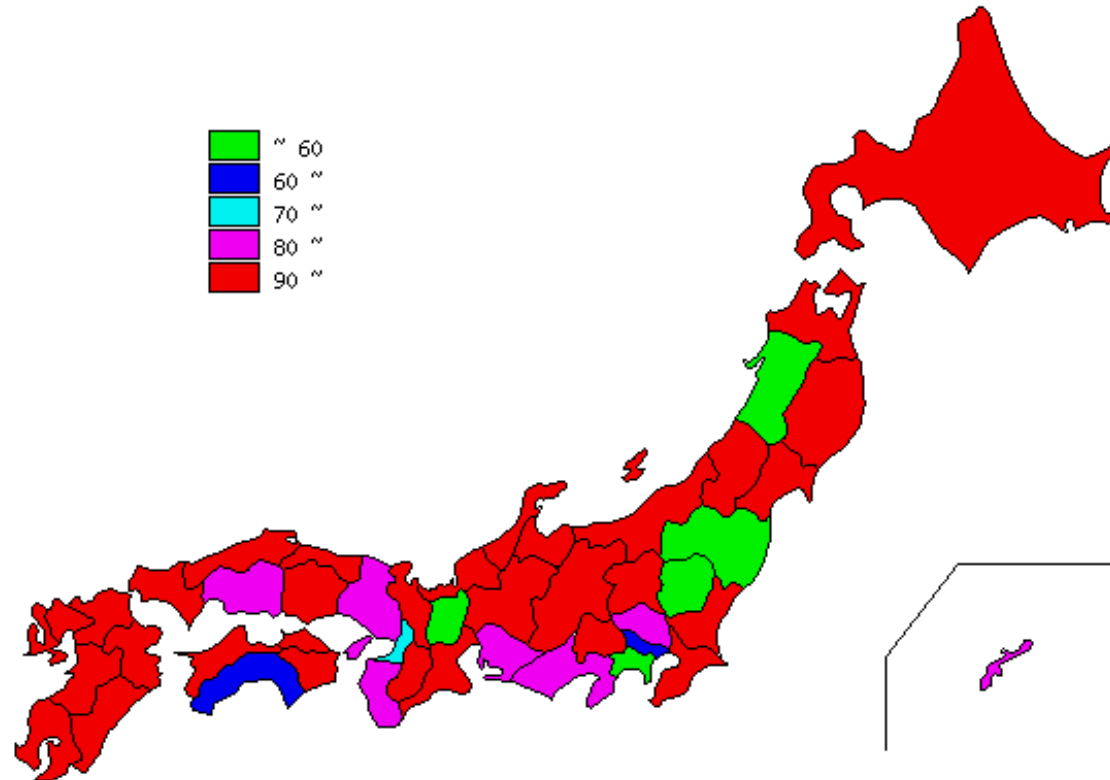
## 5. Functions of national universities by prefecture Share of Grants-in-Aid for Scientific Research

- ▶ If certain exceptions are disregarded (prefectures without a national university faculty of medicine [Iwate, Fukushima, Tochigi, Saitama, Kanagawa and Wakayama] and those without a science and engineering faculty in the national university [Shiga]), national universities have a 70% or greater share of Grants-in-Aid for Scientific Research in every prefecture apart from Tokyo and Hyogo.



## 5. Functions of national universities by prefecture

### Share of joint research activity



## 5. Functions of national universities by prefecture

### Share of joint research activity

- ▶ If certain exceptions are disregarded (prefectures without a national university faculty of medicine [Fukushima, Tochigi and Kanagawa] and those without a science and engineering faculty in the national university [Shiga]), national universities have a 70% or higher share of joint research activity in every prefecture apart from Akita, Tokyo and Kochi.

## 6. Functions of national universities: specific examples

### Integrated university extension function

- ▶ Provision of information to media outlets
  - Information provision to national / local newspapers
  - Information provision to international / national / local television and radio stations (including in-person appearances)
  - Information provision to national / local magazines, etc.
- ▶ Consultation (clients and content)
  - General public: Advisory position in XX Medical Clinic (planning and operation of associated facilities, etc.), consultation on computer software issues, health counseling on dementia)
  - Elementary schools: Regarding XX Steel Corporation (traditional Japanese ironworking techniques)
  - Prefectural senior high schools / educational facilities in the prefecture: Preliminary discussions, etc. on SSH (Super Science High School) application, consultation on educational and learning aspects of the development of SSH projects
  - Corporate entities: Planning and evaluation of environmentally-conscious agricultural and rural development projects, consultation on assistance for the intellectually disabled in community life
  - Private enterprises: Consultation on science and technology for functional food, consultation on science and technology for biological tests related to immunity
  - Various government ministries and agencies : Regarding river infrastructure planning, on the impact of improvements to the XX River on aquatic animal life
  - Local public entities: Provision of specialist opinions to the committee for scrutiny of the basic plan for maintenance and use of XX historical site, regarding energy education, regarding the establishment and operation of a council for promotion of inter-regional and inter-occupational collaboration, regarding municipal amalgamations
  - Regional agricultural administration offices: Design for repairs to headworks (an installation which allows river water to flow into an irrigation channel) / analysis of thermal stress in a concrete dam
  - Health care facilities: Tests in medical zoology (the study of animal life forms that cause disease in humans [protozoans, worms, parasites], illnesses caused thereby and prevention of infection, etc.)
  - Non-governmental organizations: Scientific and technological consultation on the therapeutic properties of citrus leaves
  - Prefectural police: Consultation on public safety conditions in countries to which officers are dispatched
- ▶ Membership of various national and local governmental committees
- ▶ Planning of various local events

## 7. Concluding comments

### 7.1 Reviewing the facts

- ▶ National universities assume the core roles in the functions of (1) research, (2) research-based university extension and (3) graduate education.
  - ▶ Regionally-oriented national universities:
    - Account for a certain portion of each of the above three functions (30-50%).
    - Their importance can be more clearly identified by examining different specialist fields separately (50-100% contribution to each function)
  - ▶ When viewed on a prefecture-by-prefecture basis, national universities have a 70% or greater share in (1) research and (2) research-based university extension functions in almost all prefectures.
  - ▶ Examination at individual institutional level reveals that regionally-oriented national universities exercise their integrated university extension function through a variety of forms of linkage with a wide range of stakeholders.
- ↓
- ▶ Regionally-oriented national universities perform the dual functions of “national universities” and “regional universities”.

## 7. Concluding comments

### 7.2 Policy consensus

- ▶ Allocation of operating expense subsidies must take into account these realities of functional differentiation within the national university system. Otherwise, there is a substantial risk of undermining the efficiency of the system as a whole (generating dysfunctions).
  - “Ignorance of functions (roles)” is not the same thing as “non-existence of functions (roles)”.