



# Cancer control monitoring with cancer incidence, mortality and survival trends in Osaka, Japan

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# Background

- **Stomach, colorectal, breast and cervical cancers:**  
Good candidates for secondary prevention because of efficient screening modalities.
- Every cancer screening program was carried out as an opportunistic screening, and the coverage was only or less than 20% in Osaka, 2004.



# Purpose

- To evaluate effectiveness of cancer control, especially of early detection by comparison with incidence and mortality trends.



# Methods

- **Data sources:**
  - Vital statistics for mortality rates.
  - Osaka Cancer Registry's data for incidence rates, survival, and the proportion of cancer stage.
  - Japanese model population of 1985 for age-adjusted mortality/incidence rates.



- **Analyzed primary sites:**

- Stomach (ICD 10<sup>th</sup> Revision, C16)

- Colorectum (C18-C21), Breast (C50),  
Cervix Uteri (C53+C55)

- Cervix uteri included uterus, NOS (C55) as it was difficult to distinguish between cervix and corpus in the mortality statistics.
- Included carcinoma in situ in the analysis of distribution of cancer stage.



- **Classification of stage at diagnosis:**

- Carcinoma in situ (CIS)

- Localized:

Cancer is confined to the original organ

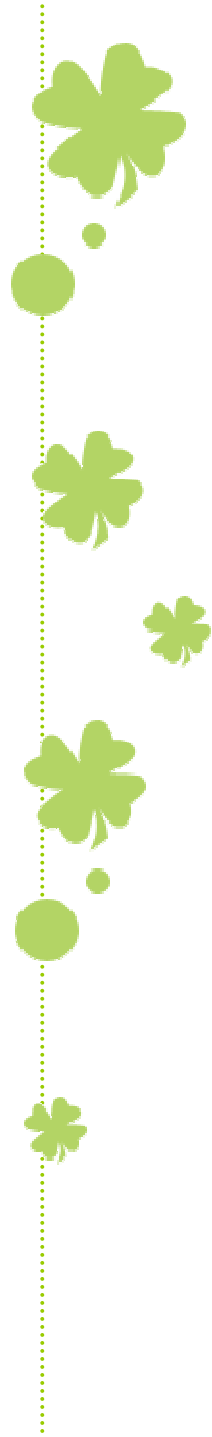
- Regional:

Cancer spreads to regional lymph nodes and/or spreads to immediately adjacent organs/tissues

- Distant:

Cancer metastasizes to distant organs/tissues

- Unknown

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- **Joinpoints and Annual Percent Change :**
    - Using a Joinpoint regression model (The package of Jointpoint 3.3 by U.S. National Cancer Institute).
    - Identified joinpoints where statistically significant changes in the trend in each cancer incidence or mortality occurred.
    - Estimated APC at each segment between joinpoints.

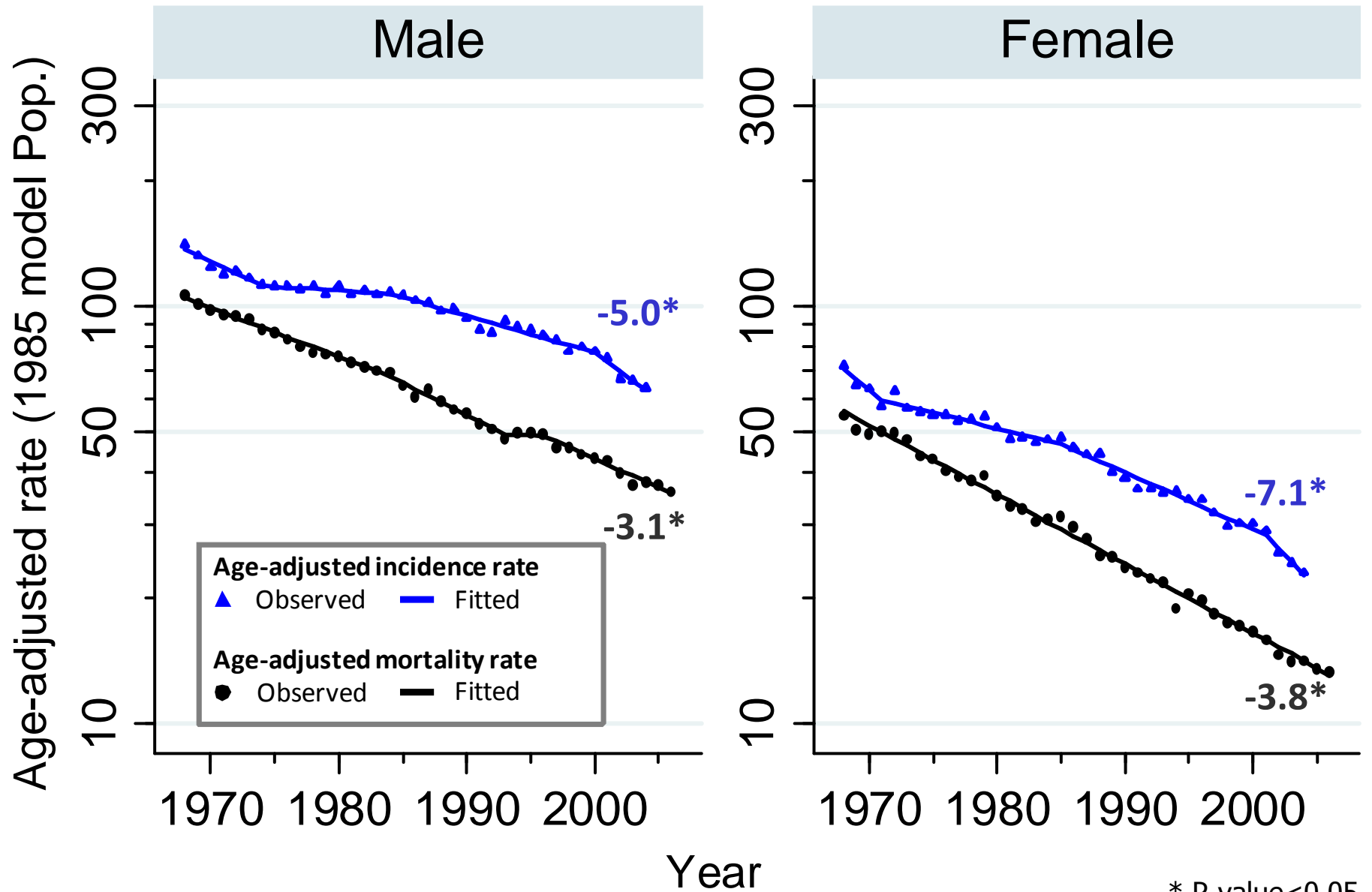


- **Survival:**

- Calculated relative 5-year survivals as the ratios of the observed to the expected survivals.
- The observed survivals were estimated using the Kaplan-Meier method.
- The expected survivals were estimated using the survival probabilities of similar subjects in the general population of Japan with respect to sex, age and calendar year at diagnosis.

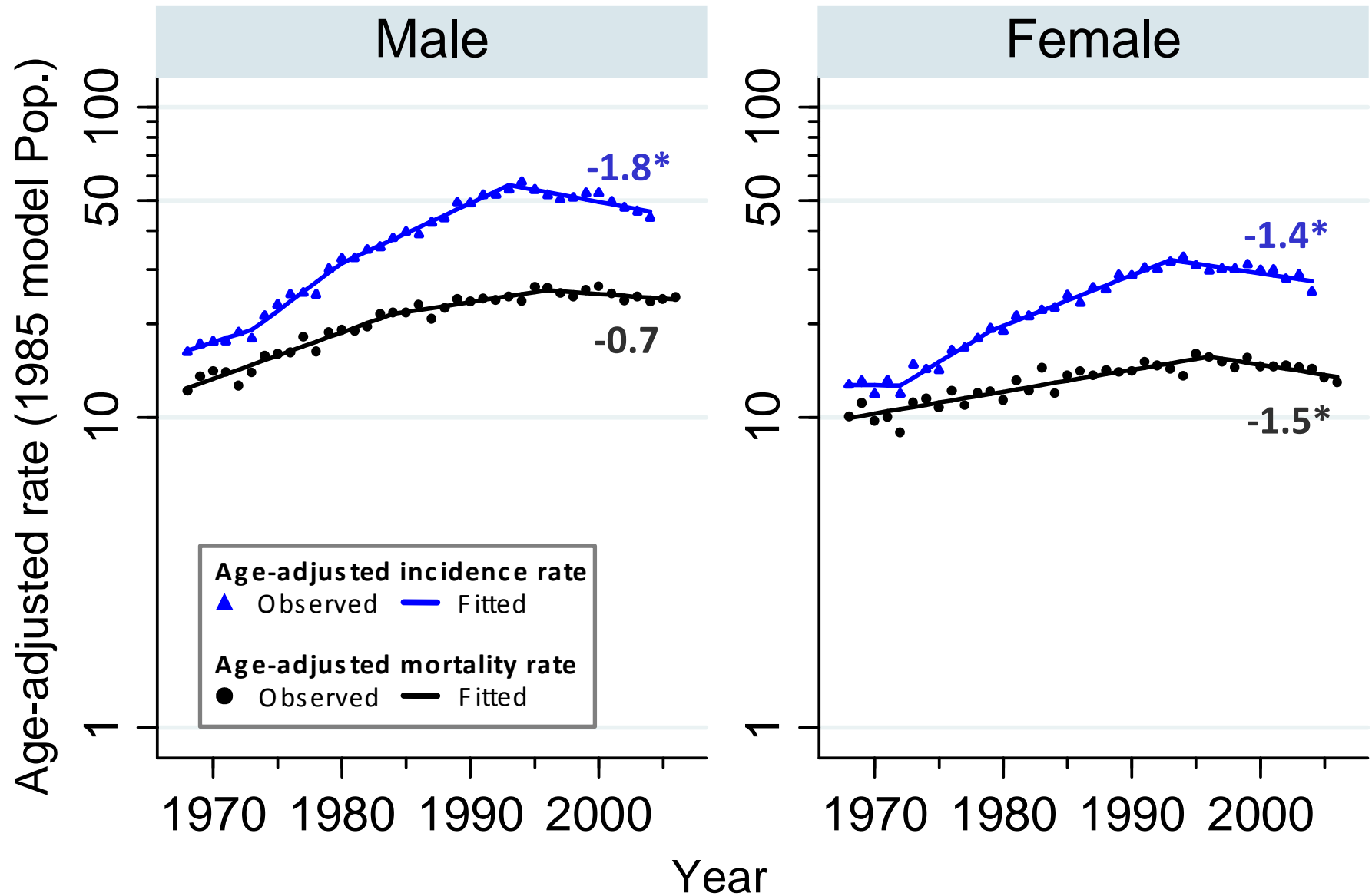


# Stomach (C16)



\* P-value<0.05

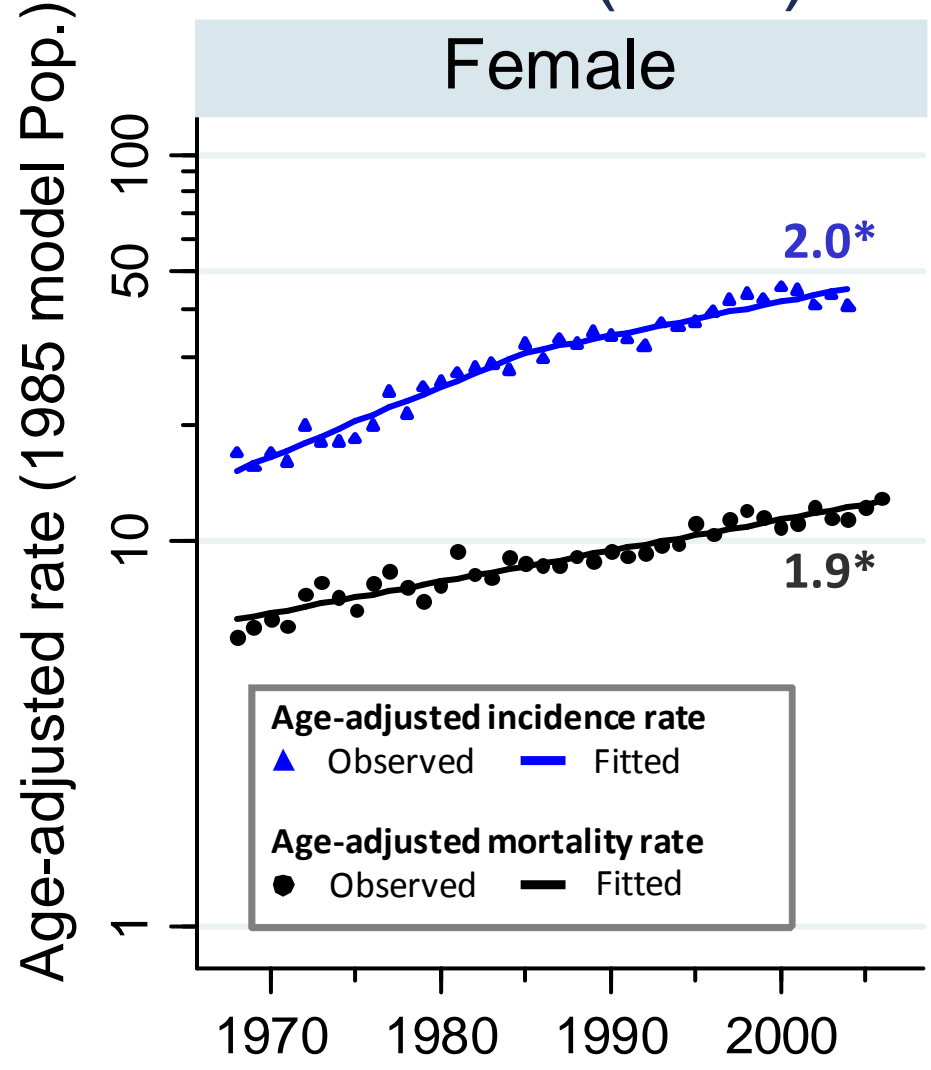
# Colorectum (C18-C21)



\* P-value < 0.05

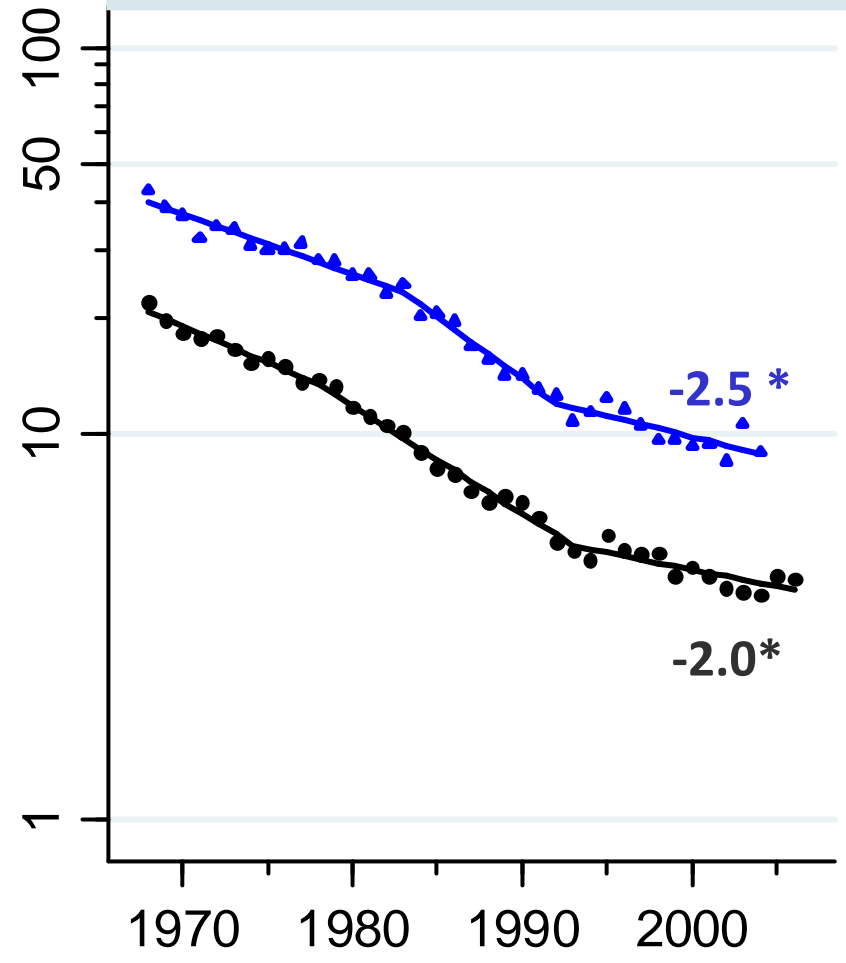
# Breast (C50)

Female



# Cervix (C53, C55)

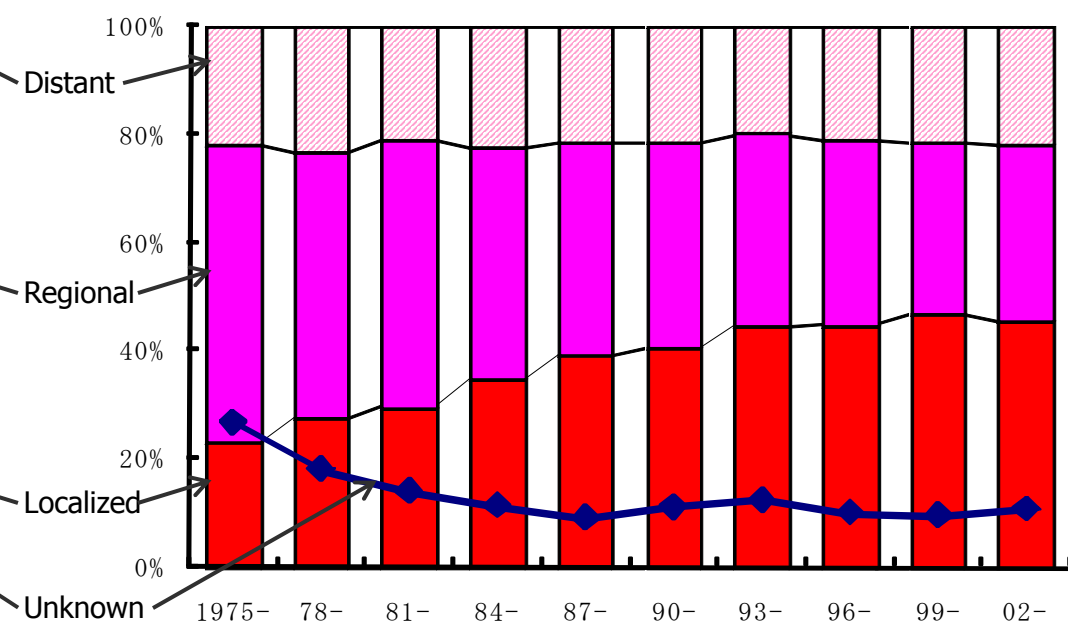
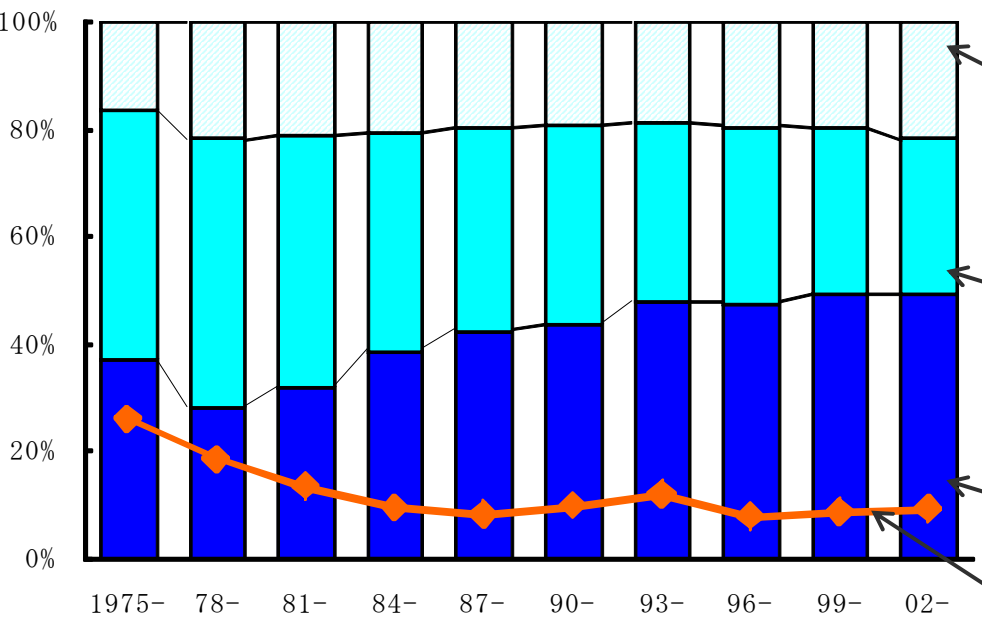
Female



\* P-value < 0.05

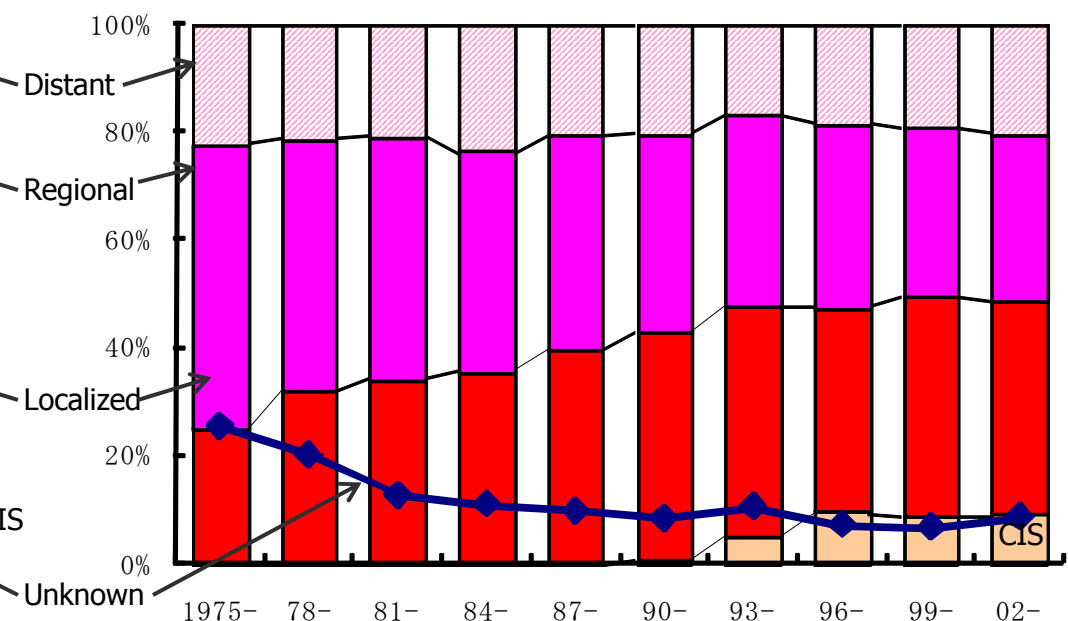
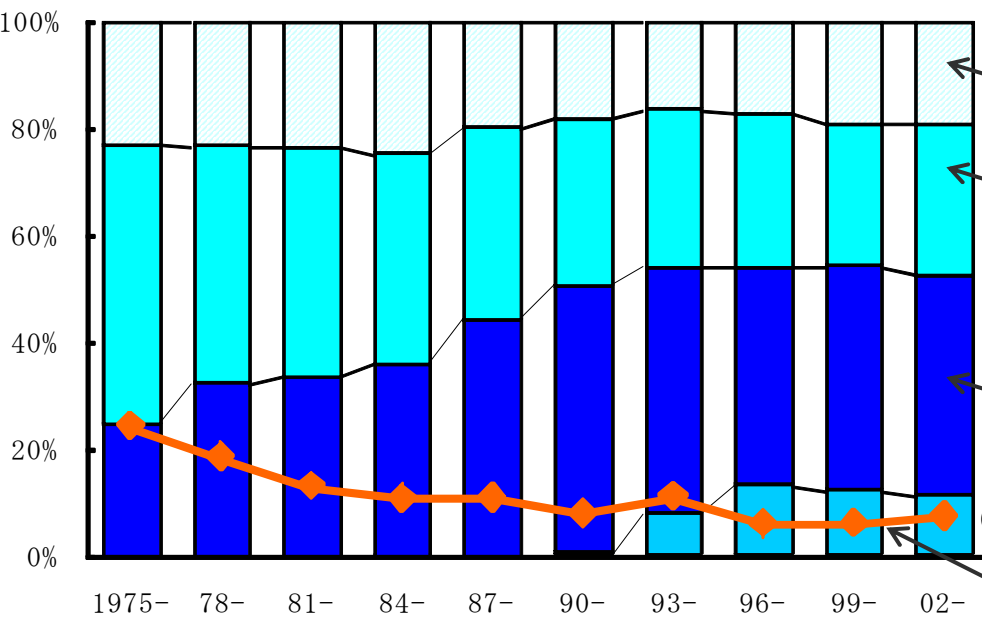
### Stomach (Male)

### Stomach (Female)

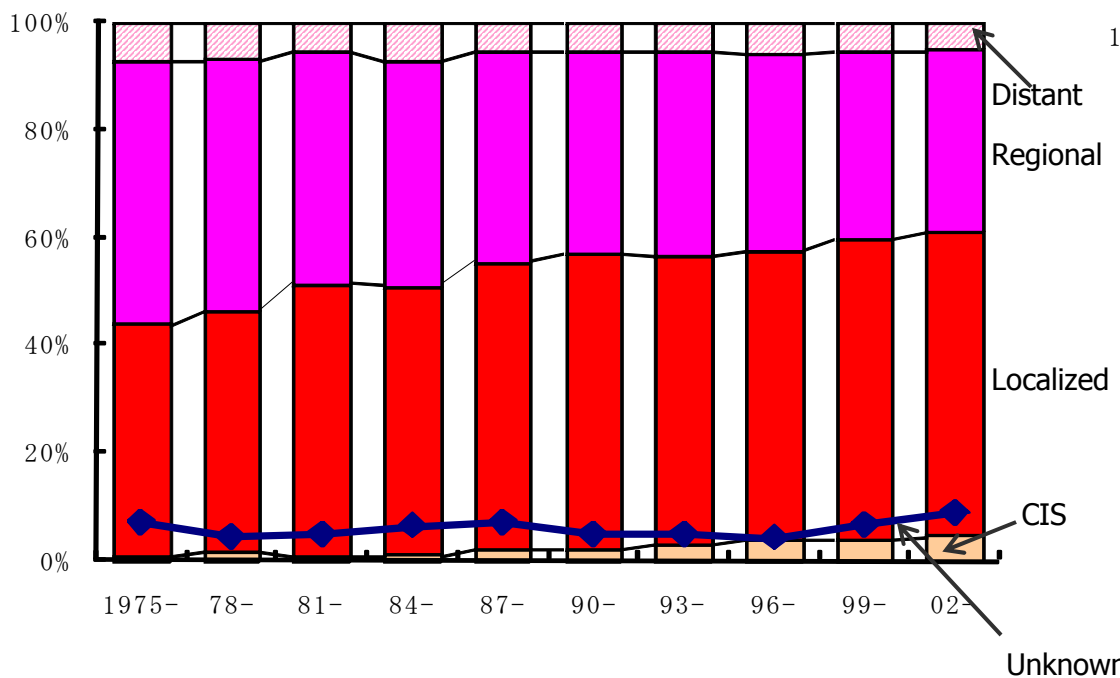


### Colorectum (Male)

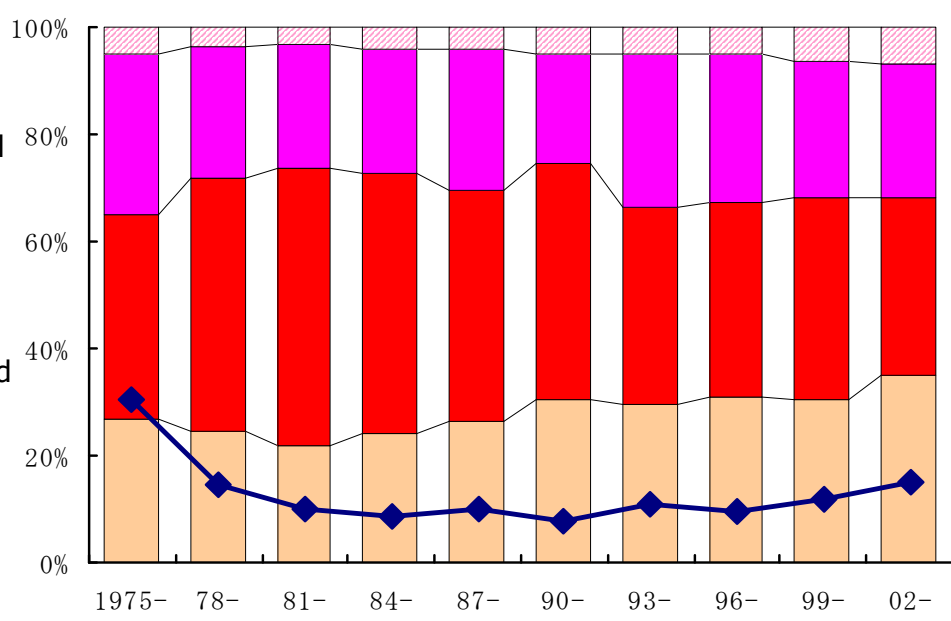
### Colorectum (Female)



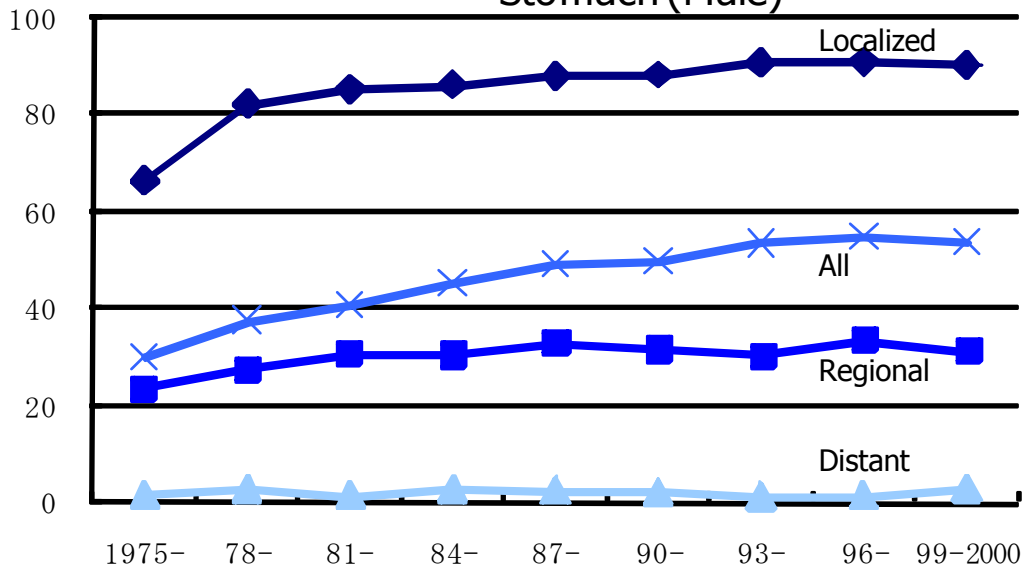
### Breast (Female)



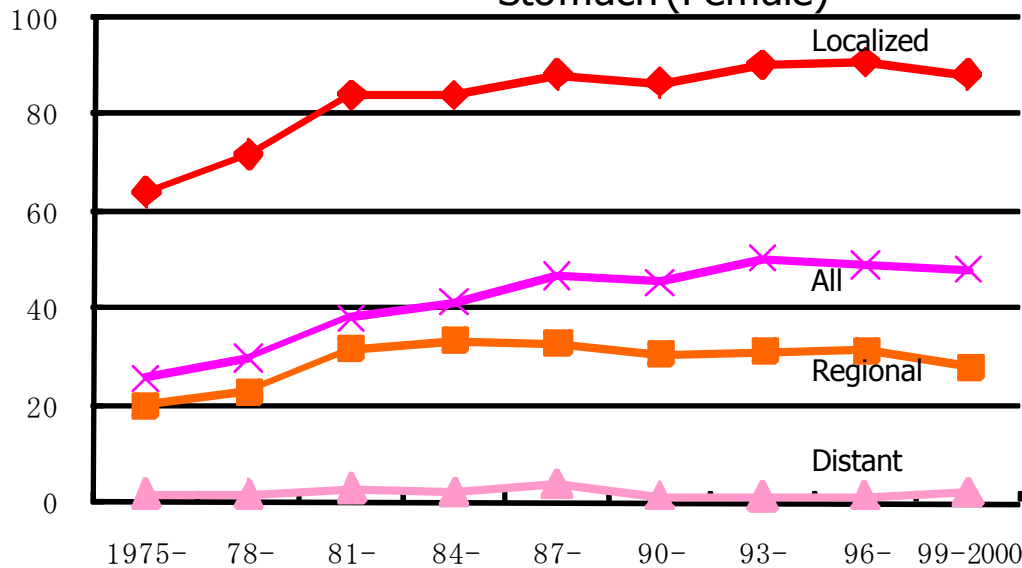
### Cervix Uteri



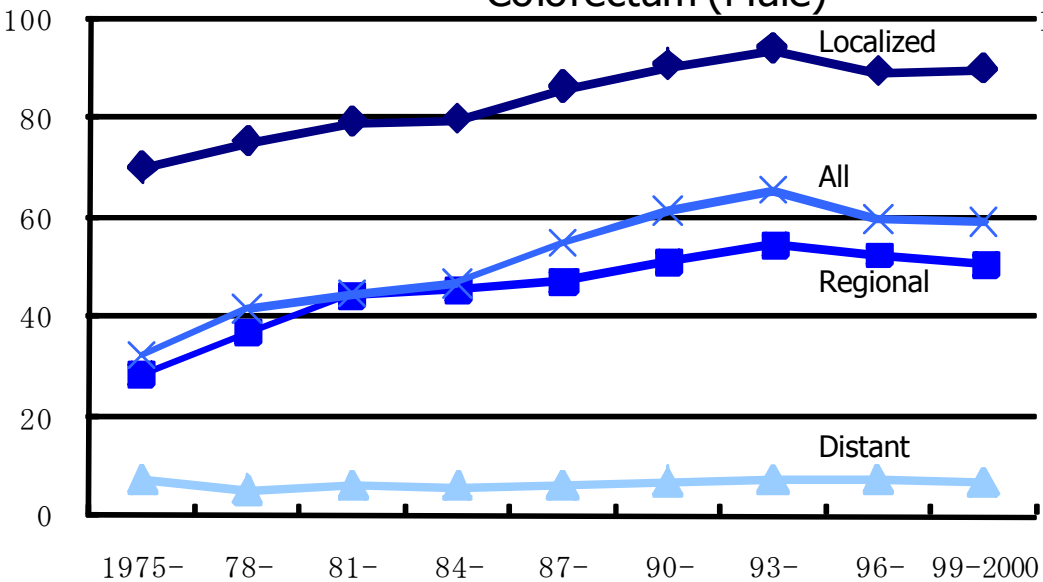
### Stomach (Male)



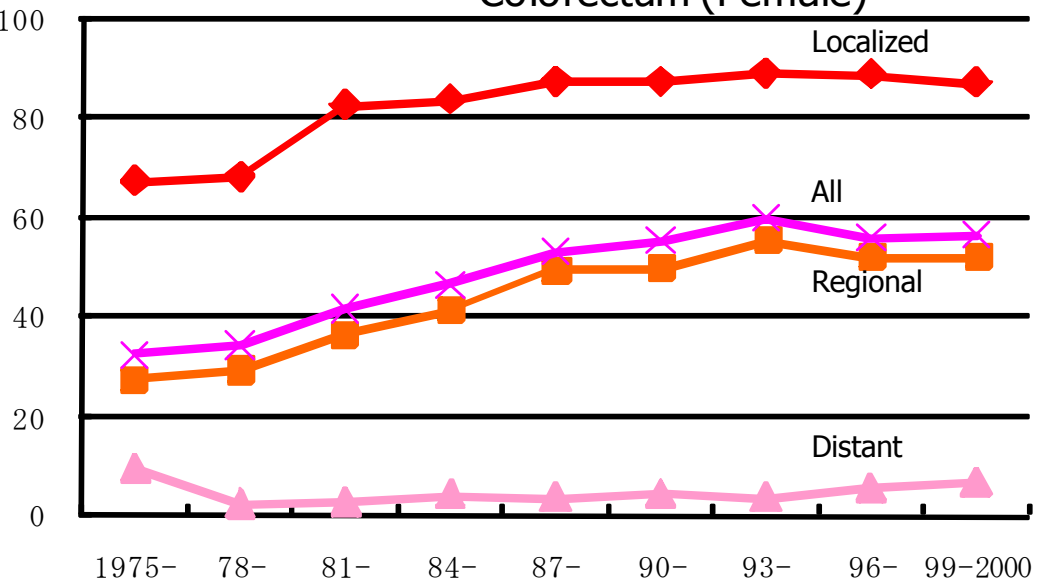
### Stomach (Female)

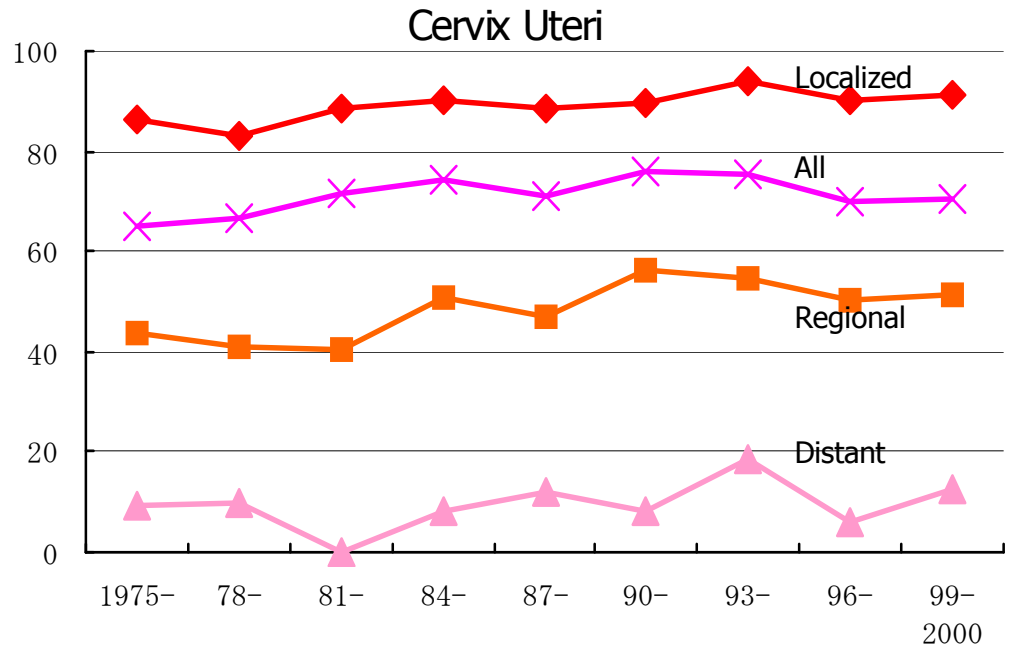
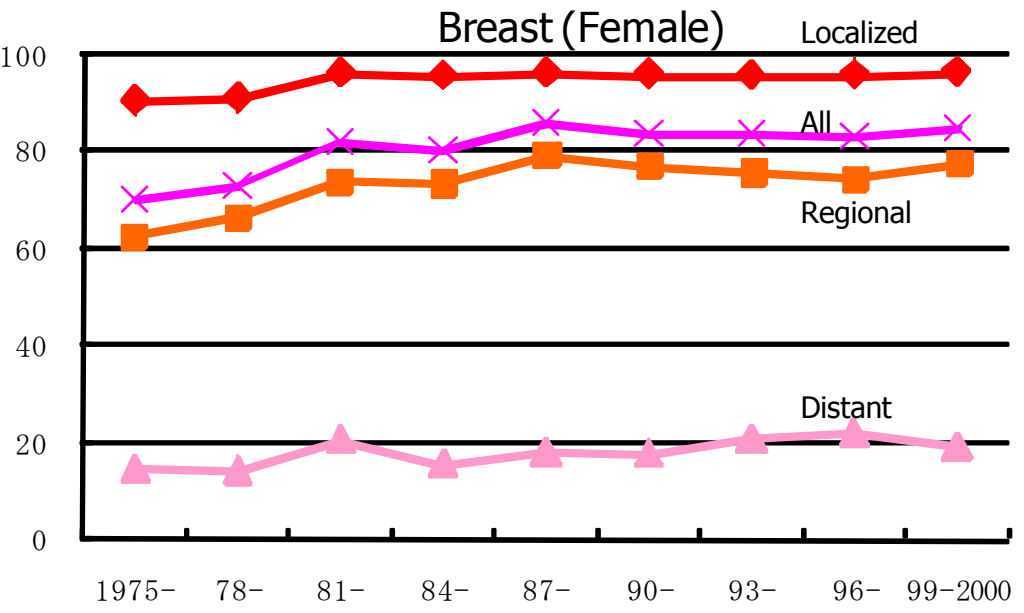


### Colorectum (Male)



### Colorectum (Female)







# Conclusions

- **Smaller decreasing stomach/colorectal/cervical cancer mortality than incidence:**
  - Time-lag of decreasing between incidence and mortality
  - Delay of cancer registration
- **Increasing breast cancer mortality:**
  - Delay of the introduction of screening with mammography which has just started since 2004 in Japan.



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- **Effective secondary prevention in Osaka is more important.**

**Because of....**

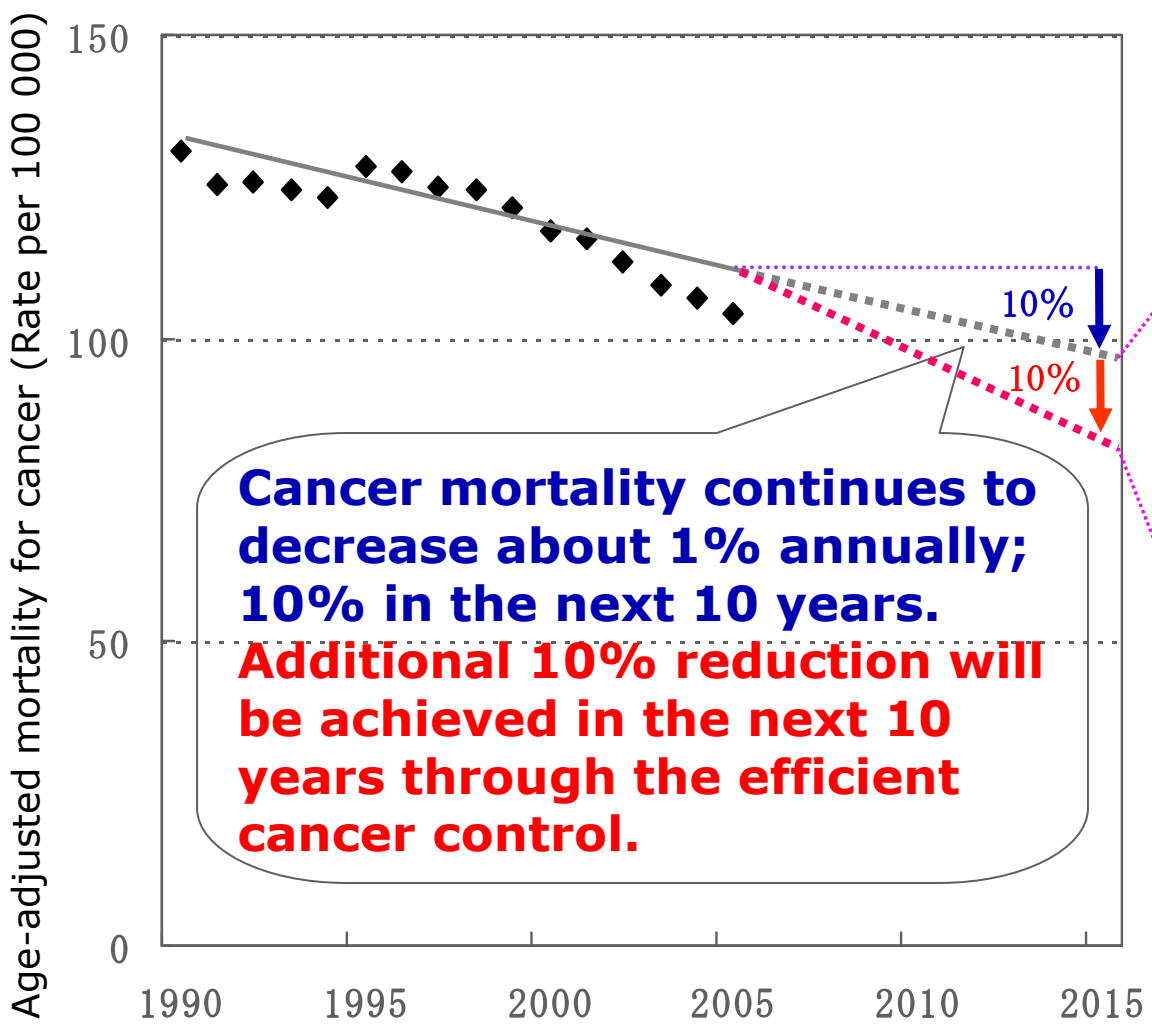
- stable proportion of localized stage in stomach/colorectal cancer.
- increasing breast cancer mortality.
- the survival increased slightly for the last decade.



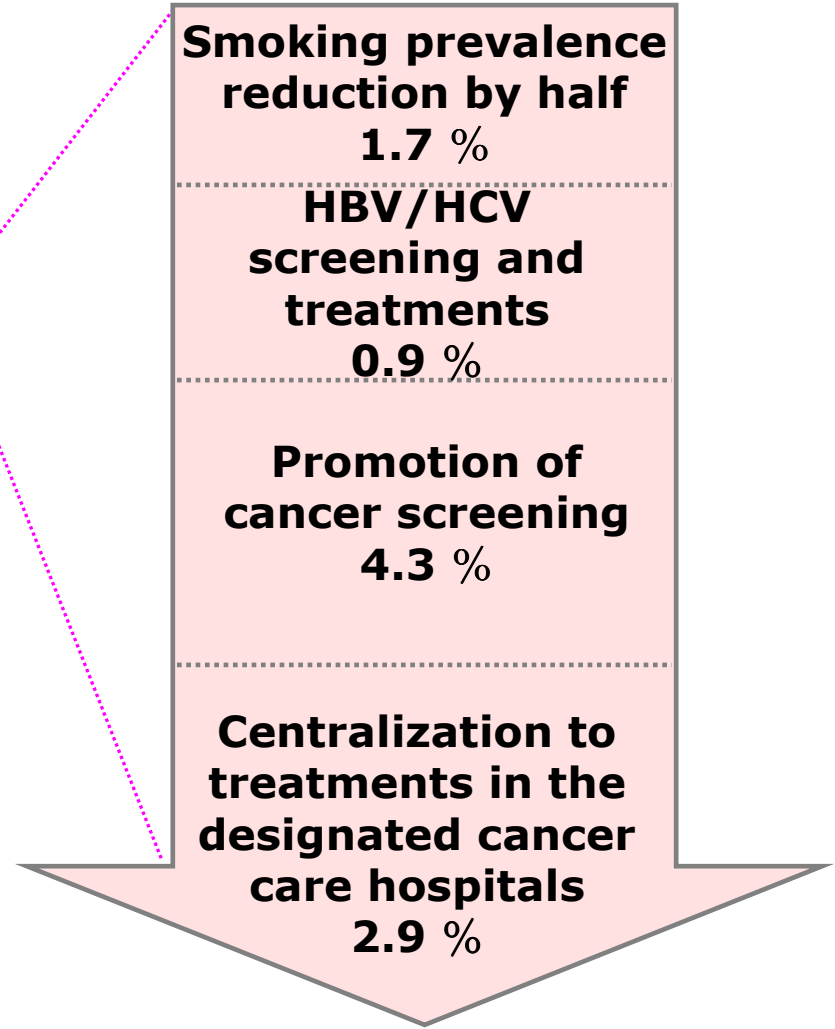
# **Implications in the future cancer control**

- **To increase screening coverage and the detection of earlier stage disease....**
  - Establish organized screening system including identification of individuals in target population.
  - With effective outreach interventions, such as personal letter of invitation.

# Estimation of the reducing mortality by some efficient cancer control in the next 10 years



## Reduction in mortality by the efficient cancer control





**Thank you for your attention!**