

10th International Geography Olympiad

FIELDWORK

iGeo Kyoto 2013



Cities and Water

Resource Booklet

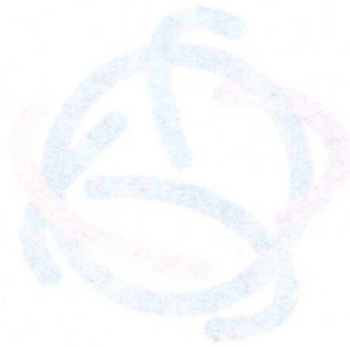
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Chies and Viller

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NAME

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Introduction

Many Japanese cities have evolved as a consequence of the availability and use of local water. In the pre-modern era, water was used for variety of purposes in urban areas (transportation, drinking and domestic use, for ceremonial purposes and in industry). In the modern era water has also been used for generating electricity. Such is the importance of water that there is a Japanese term *Shinsui*, which literally means 'water intimacy'. National government and public discourses now emphasize that water sustains people's everyday lives. While water is vital for urban living, too much water may cause problems like flooding; humans need to protect themselves from the risk of hazards (at the interface between extreme natural events and human occupancy of space).

Ever since the national capital was formed nearly 1200 years ago, Kyoto has had close connections with local water, most notably the Kamo River. Since the Meiji period in the late 19th century, the City of Kyoto has taken water from Lake Biwa and used it to supplement local ground water in the development of local economies and residential areas. You will have seen the video presentation at the Lake Biwa Canal Museum on the Excursion this afternoon; it explained the background and current use of Biwako Sosui (the water delivery canal from Lake Biwa). Currently, millions of residents and tourists have access to a secure water supply throughout Kyoto.

Fushimi developed as a river transportation gateway to Kyoto more than 400 years ago, and is a community that especially demonstrates a close connection with water. Current urban development and planning of Fushimi actively emphasizes its relationship with water. The Local Organizing Committee chose Fushimi as the site of the Field Work Task, and we welcome students from around the world to Japan and to the FWT in Fushimi in particular.

In the FWT we will explore some historical associations with water, the way water has influenced the local geographies of Fushimi and the important matters that will shape the future of this community. We note in particular that;

1. More than most places in Japan, Fushimi has worked to build a place that utilized water in the development of the local community.
2. Although there are issues in modern Fushimi (such as deterioration of the old center and narrow roads), awareness of these issues can lead to planning strategies that make good use of key resources like water, and the history/heritage of former water uses.

The first field work exercise tomorrow (observation and field data recording) will provide you with material for innovative ideas that would make Fushimi a more sustainable community with effective use of resources like the local water supply. The second fieldwork test (written answers) on Friday morning requires you to use the Fushimi fieldwork in a written response.

The fieldwork is supported by a small excursion this afternoon (Wednesday July 31). At the excursion, we distributed a worksheet and you wrote down your observations at several locations and made some geographical sketches. At this evening's briefing, Professor Yoshihiro Fujitsuka (Osaka City University) presents a guest lecture entitled *Changing Functions of Waterways: the Case of Kyoto City*, and Taro Futumura describes the resources that support the fieldwork on 1 August. Professor Lex Chalmers makes comments on cartography, including map symbology, legends and design (based on Diercke Atlas material).

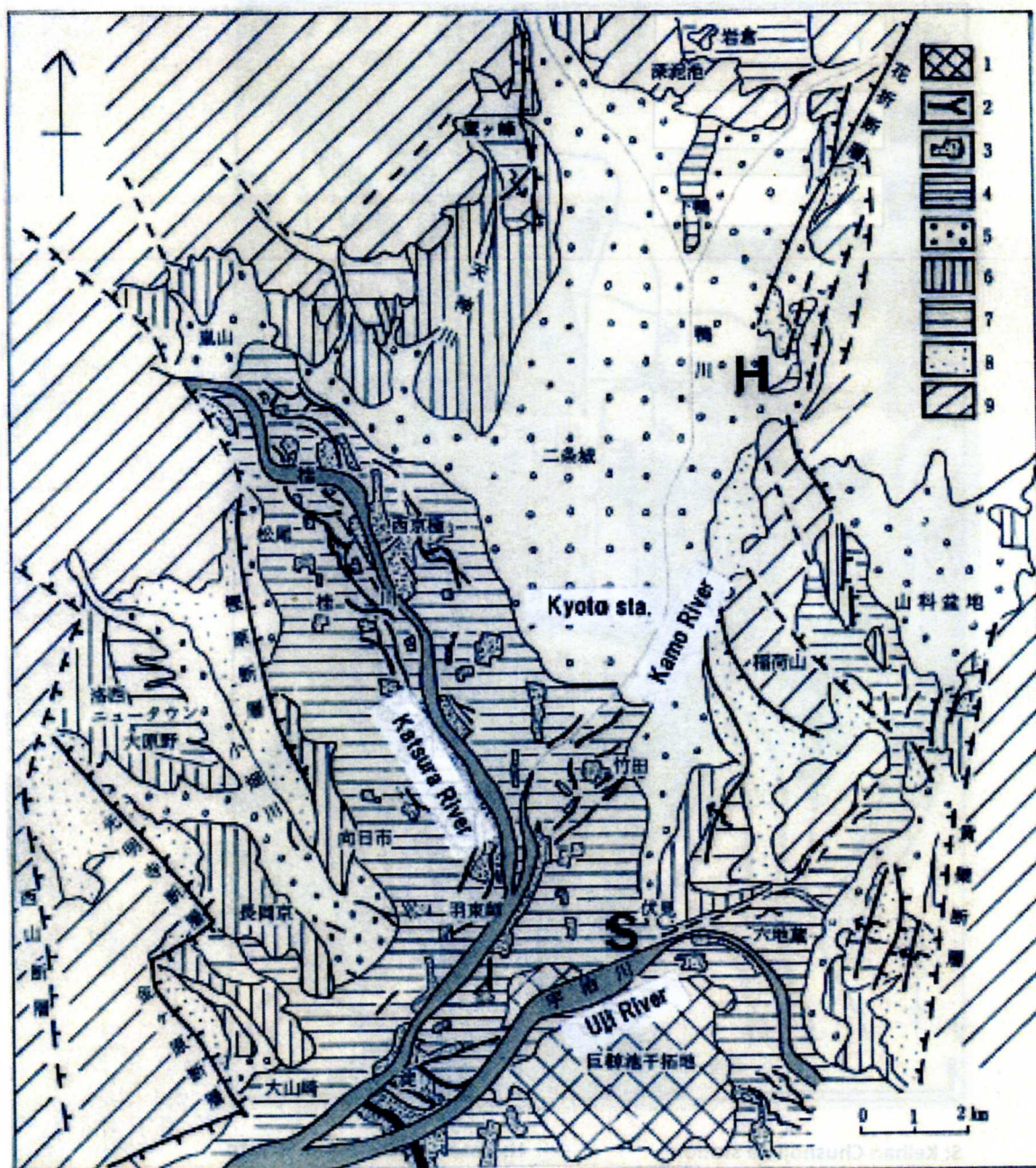
In addition, students have access to a number of resources. The Diercke Atlas has been distributed, and English handouts of (i) Biwako Sosui Kinenkan (Lake Biwa canal memorial museum material) and (ii) the map of Kyoto (1:25000) are available to participants.

List of materials included in the Resource Booklet

On some maps, "H" indicates Hotel Heiannomori Kyoto, and "S" indicates Chushojima Station.

- 1 Landform Classification Map of Kyoto Basin Landform classification map of Kyoto Basin (scale 1:130,000 approx). This map shows the geology that determines the geomorphology of the Kyoto basin. Indurated Mesozoic rocks, in an environment that experiences nearly 1500mm rain annually, have been weathered by fluvial action to produce extensive alluvial fans and river terraces in the Tertiary era. More recent fluvial deposition has produced back marshes and flood plains.
- 2 Flood Damage in Areas of the Kyoto Basin (scale 1:150,000 approx). The map shows that awareness of floods are based on experience of significant events.
- 3 Risk of Flood Hazard at Fushimi. The spatial extent of flood risk in Fushimi is shown in this map. The attached graphic indicates that inundation of 0.5 metres would be inconvenient, but a 0.5-3.0m flood would cause serious damage to property and risk to life. If the flood reached 3.0m then damage to property would be extreme and there would be deaths unless extensive warning systems and public education are undertaken.
- 4 The Contour Map of Fushimi (scale 1:40,000 approx.) shows the form of the alluvial fan and the extent of the marshland at the toe of the slope.
- 5 The map of Historic and Contemporary Use of Ground Water in Sake Production (scale 1:25,000 approx.). the map shows the depth of the ground water table in Fushimi. Access to ground water is vital to sake making.
- 6 Distribution of Sake Brewing Plants in Fushimi shows the extent of the sake industry in Fushimi.
- 7 The graphic of the Demographic Structure of Fushimi (central district) shows an ageing community profile. While population fertility may change, the existing structure suggests issues associated with care of the elderly by 2035.
- 8 Tourism in Kyoto and Fushimi. A number of graphics are included, along with some explanatory text.

1 Landform Classification Map of Kyoto Basin



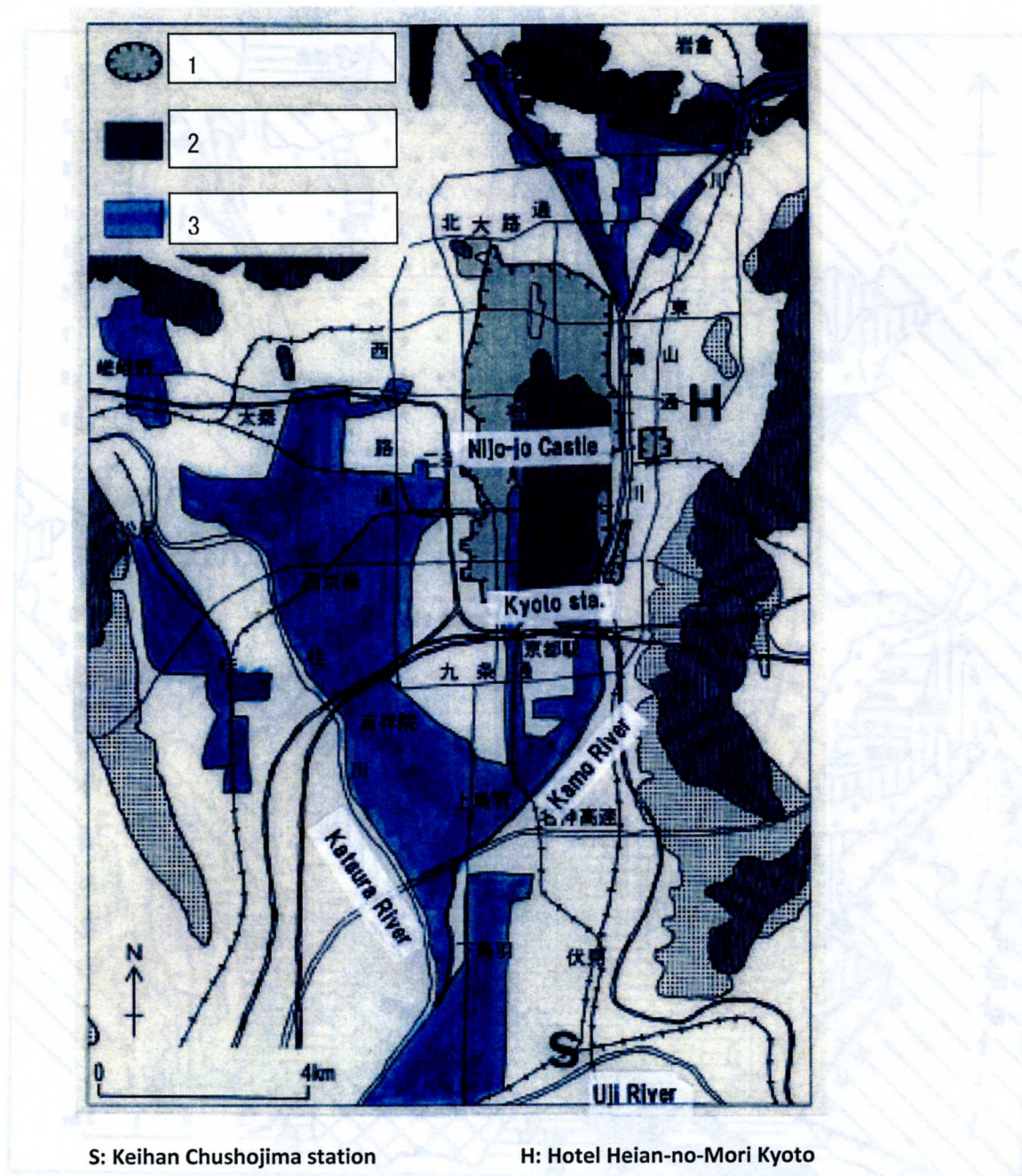
Landform classification map of Kyoto Basin

S: Keihan Chushojima station

H: Hotel Heian-no-Mori Kyoto

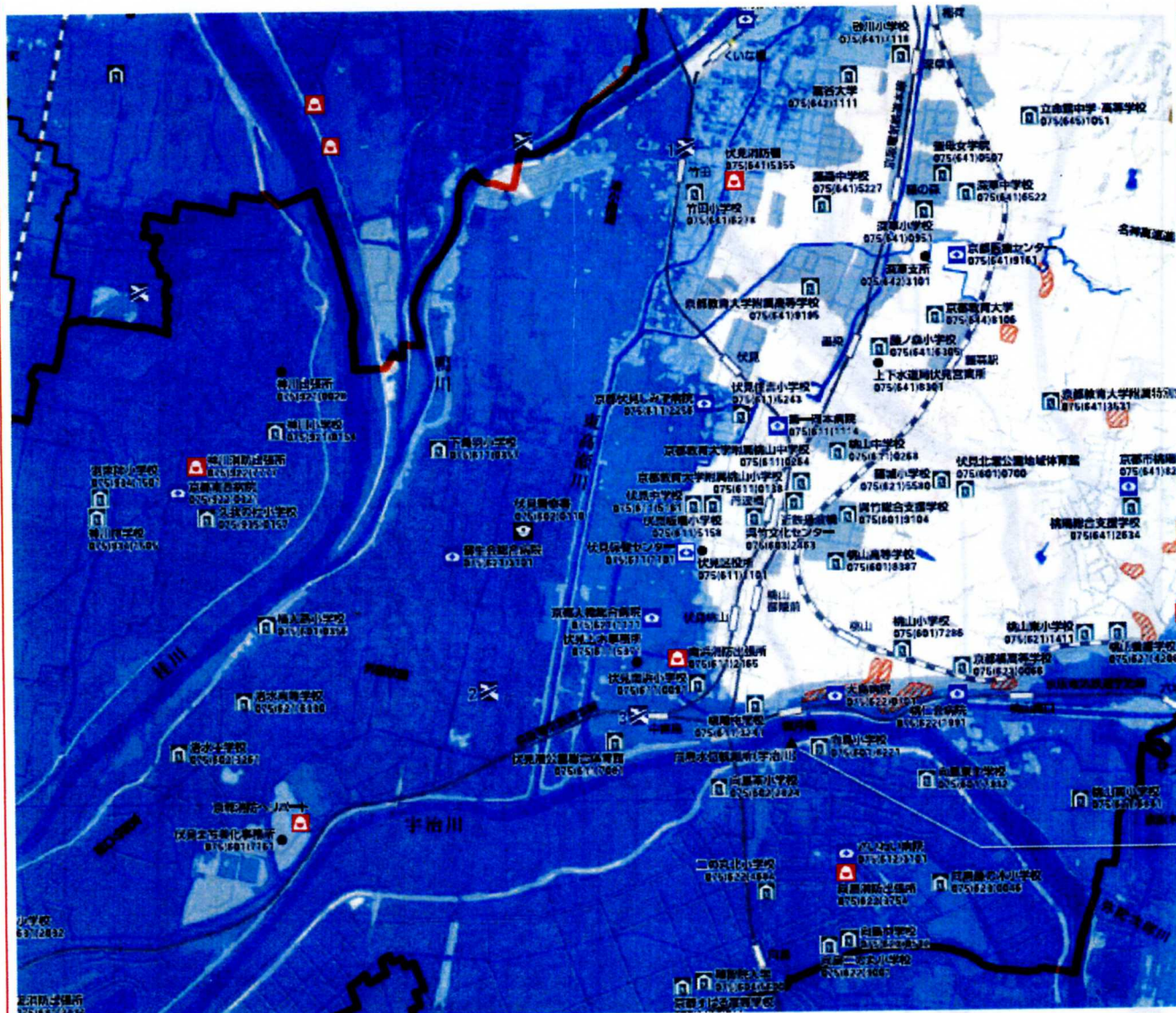
- | | |
|---------------------------------|------------------------|
| 1 reclaimed land | 6 lower river terrace |
| 2 former river bed | 7 higher river terrace |
| 3 natural levee and embankment | 8 hill |
| 4 back marsh | 9 bases mountain |
| 5 alluvial fan and valley plain | |

2 Flood Damage in Areas of the Kyoto Basin



- 1: Area burned in the great Tenmei fire (1788)
- 2: Area burned in the great Genji fire (1864)
- 3: Area inundated in the great flood of 1935

3 Risk of Flood Hazard at Fushimi



<URL>http://www.city.kyoto.lg.jp/suido/cmsfiles/contents/0000089/89718/11WA_fushimi_map_mizu.pdf



Expected water level over 3m

Inundation of 0.5m-3m

Inundation of less than 0.5m



evacuate than third floor

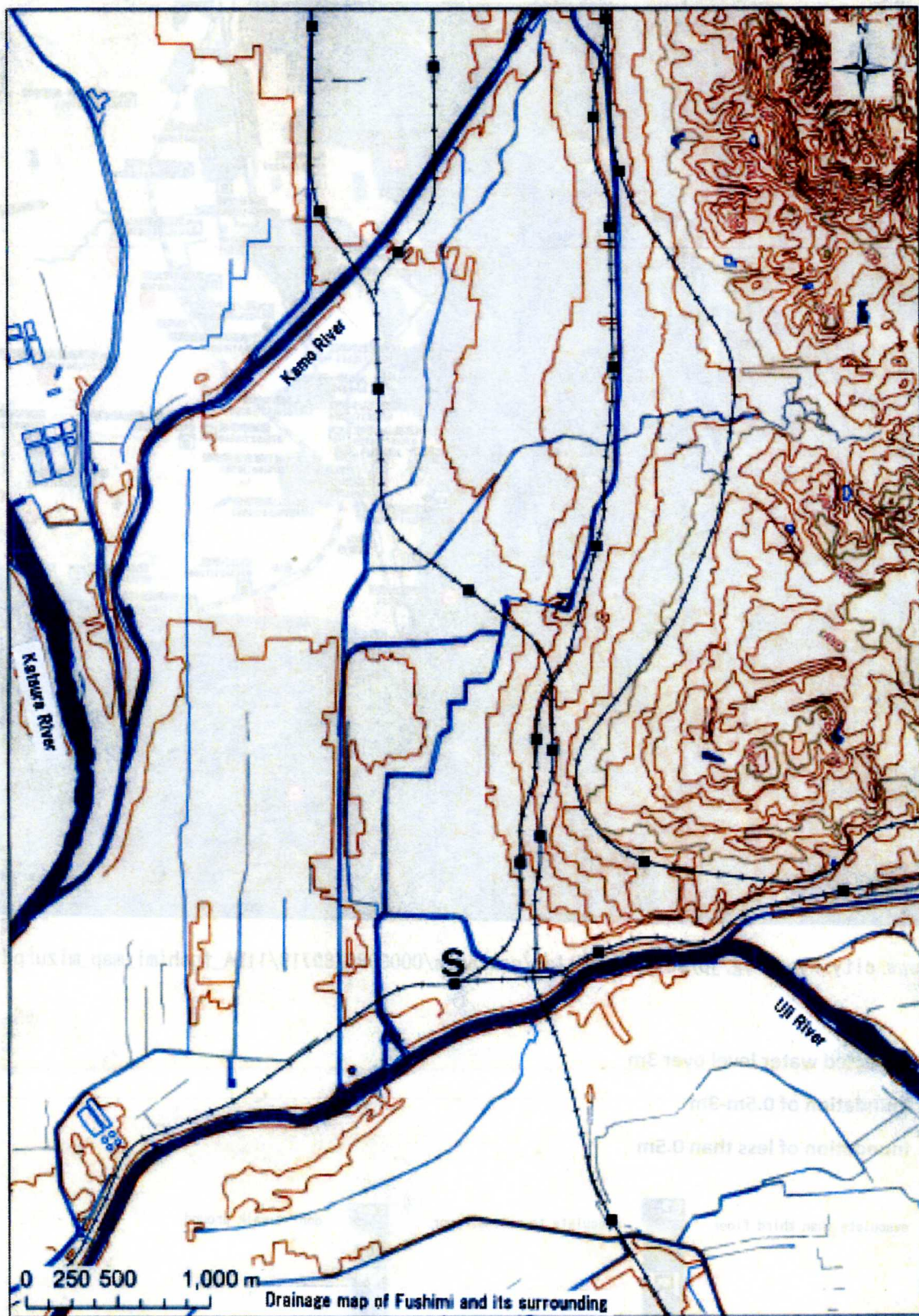


evacuate to second floor



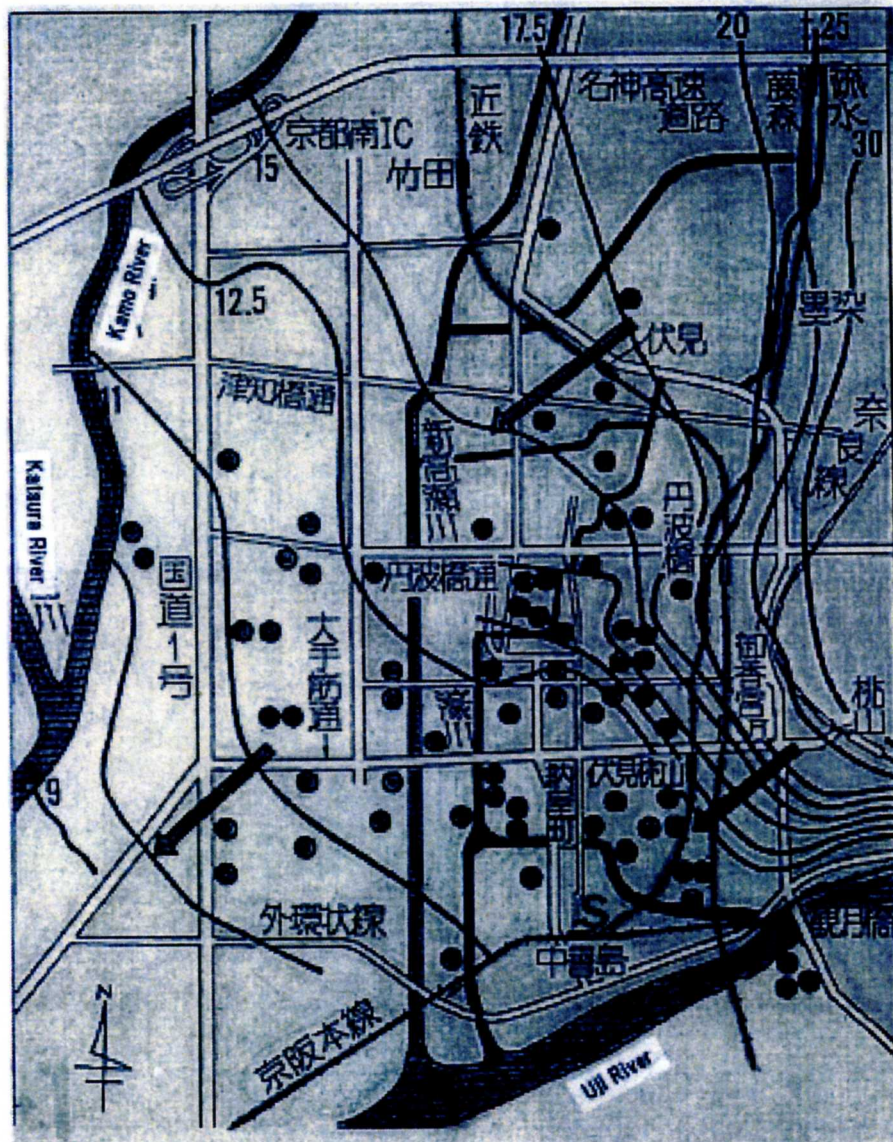
don't walk around

4 Contour Map of Fushimi Ward



S: Keihan Chushojima station. The contour interval is 20m.

5 Historic and Contemporary Use of Ground Water in Sake Production



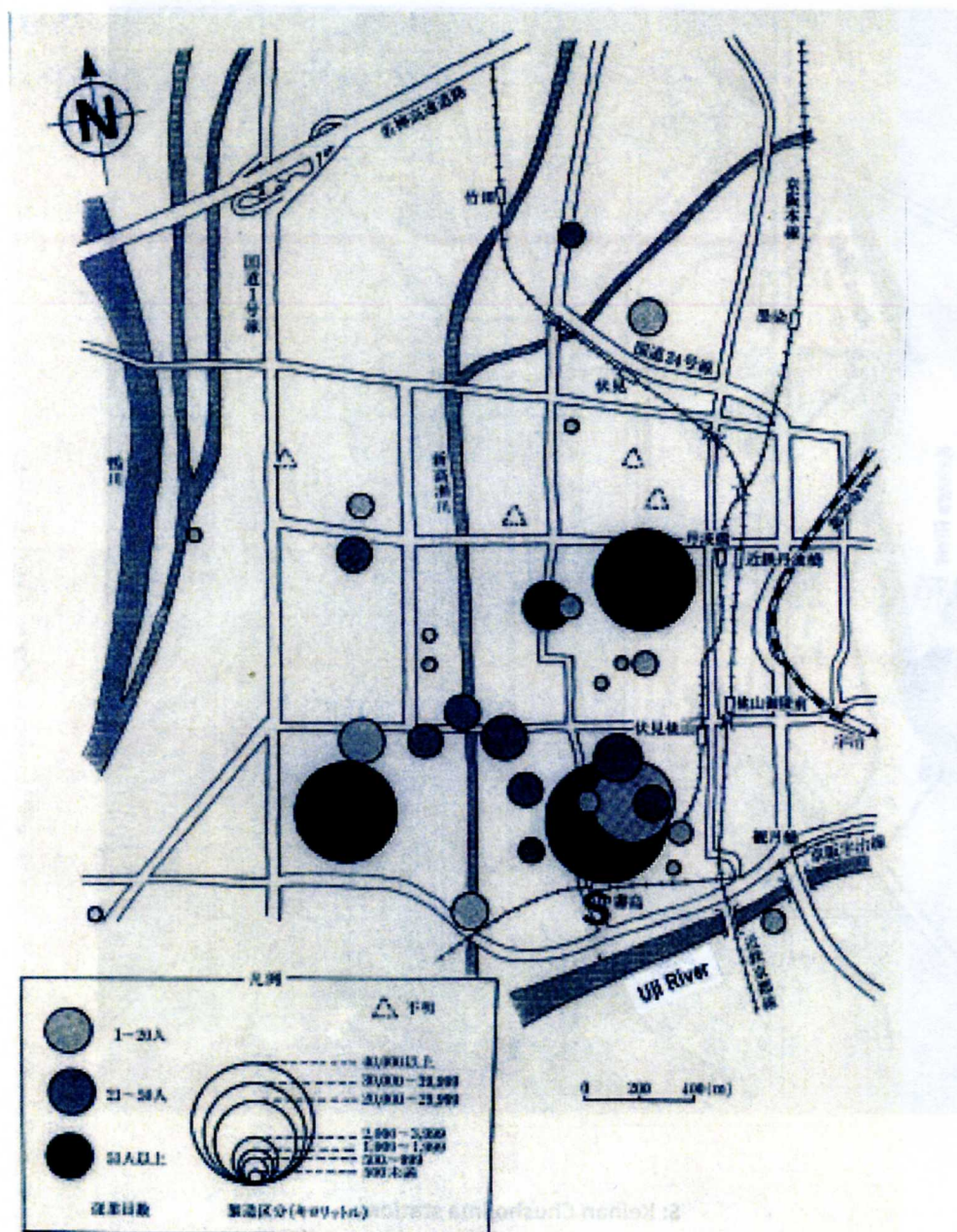
S: Keihan Chushojima station

↙: Direction of the flow of the groundwater

Contours indicate the depth of ground water below the surface. Ground water is the 'life blood' of Sake manufacturing.

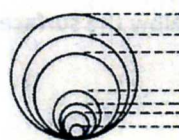
■ Sake brewery plant

6 Distribution of Sake Brewing Plants in Fushimi



- 1-20
- 21-50
- 51<

number of employees

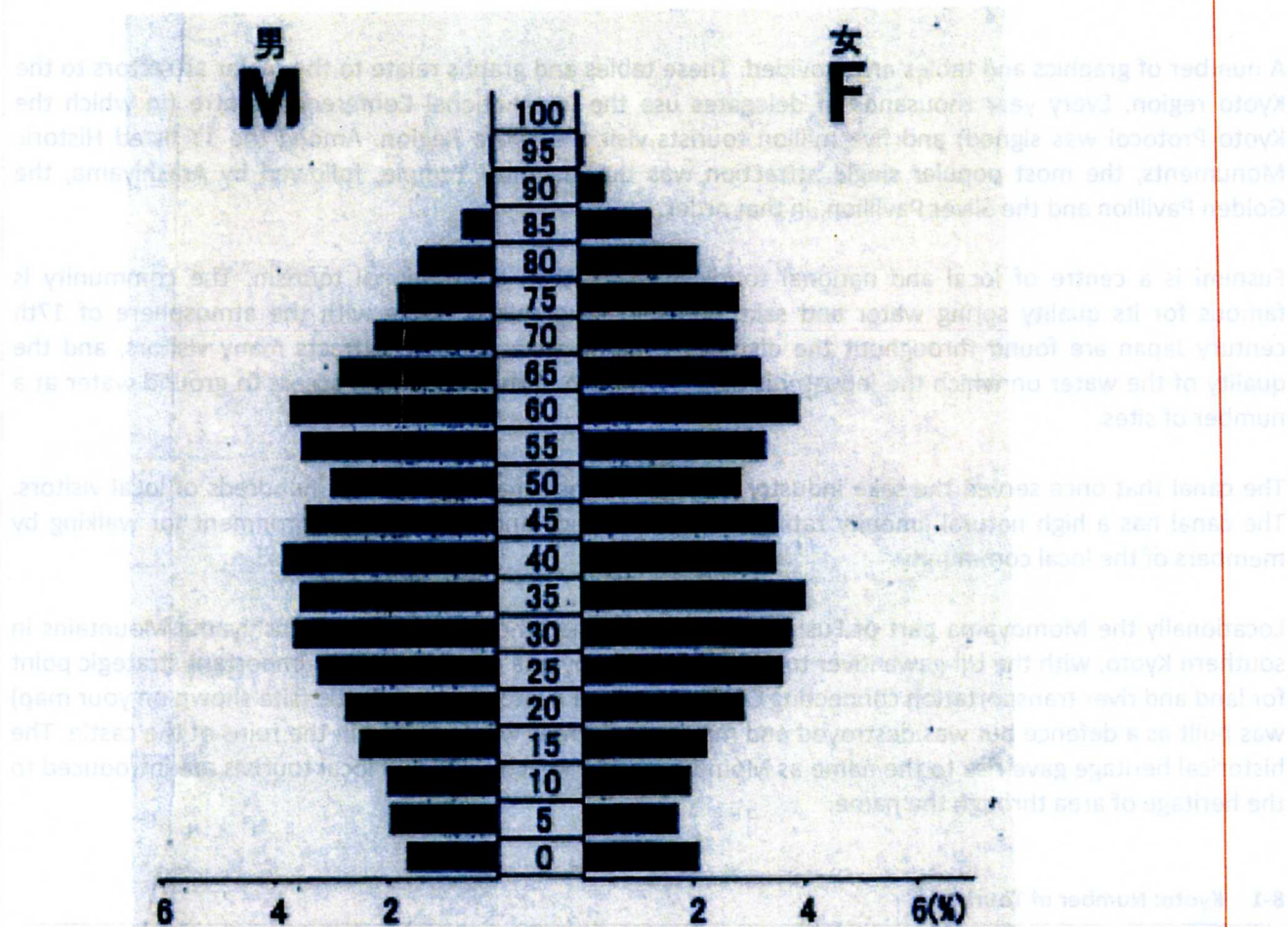


- 40,000<
- 30,000-39,999
- 20,000-29,999
- 2,000-3,999
- 1,000-1,999
- 500-999
- <500

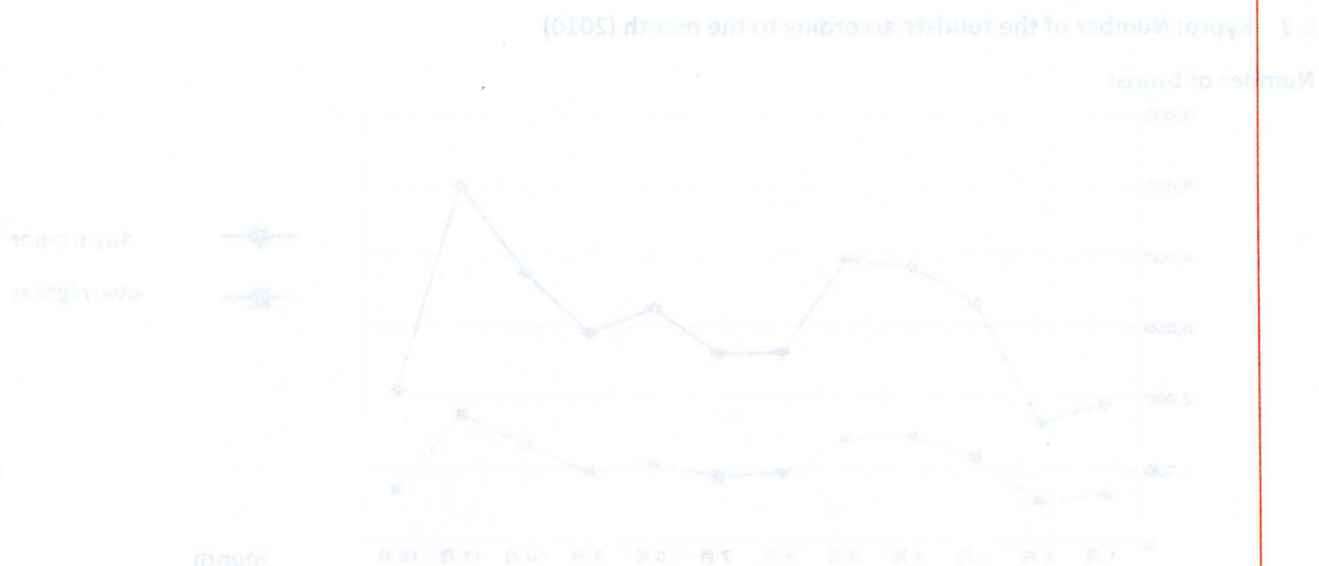
quantity of production

△ no data

7 Demographic Structure of Fushimi (central district)



Data are from the national census taken in 2010.



8 Tourism in Kyoto and Fushimi

A number of graphics and tables are provided. These tables and graphs relate to the major attractors to the Kyoto region. Every year thousands of delegates use the International Conference Centre (in which the Kyoto Protocol was signed) and five million tourists visit the Kyoto Region. Among the 17 listed Historic Monuments, the most popular single attraction was the Kiyomizu Temple, followed by Arashiyama, the Golden Pavillion and the Silver Pavillion, in that order.

Fushimi is a centre of local and national tourism, rather than international tourism. The community is famous for its quality spring water and sake brewing. Sake cellars, some with the atmosphere of 17th century Japan are found throughout the district. Fushimi's sake museum attracts many visitors, and the quality of the water on which the industry is based is shown in the free public access to ground water at a number of sites.

The canal that once served the sake industry is now a recreational boat ride for hundreds of local visitors. The canal has a high natural amenity rating as a green space and a peaceful environment for walking by members of the local community.

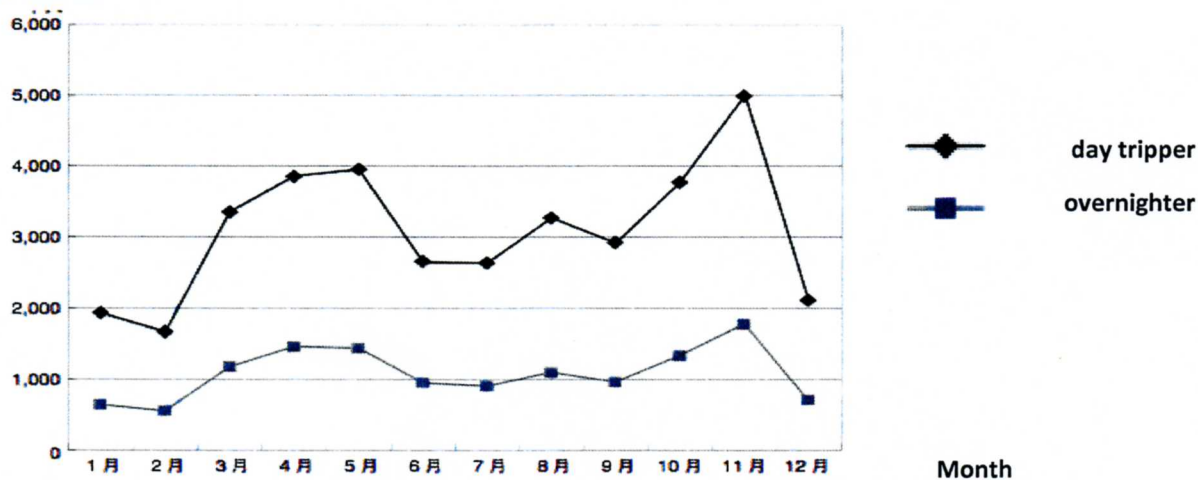
Locationally the Momoyama part of Fushimi is in the southernmost hills of the Higashiyama Mountains in southern Kyoto, with the Uji-gawa River to the south. Momoyama developed as an important strategic point for land and river transportation connecting Osaka, Nara and Kyoto. Fushimi Castle (site shown on your map) was built as a defence but was destroyed and many peach trees were planted in the ruins of the castle. The historical heritage gave rise to the name as Momoyama, or "Peach Hills" and local tourists are introduced to the heritage of area through the name.

8-1 Kyoto: Number of Tourists

year	personal trip	group tour	day tripper	overnighter
2010	45,250,000 (90.1%)	4,960,000 (9.9%)	37,149,000 (74.0%)	13,061,000 (26.0%)

8-2 Kyoto: Number of the tourists according to the month (2010)

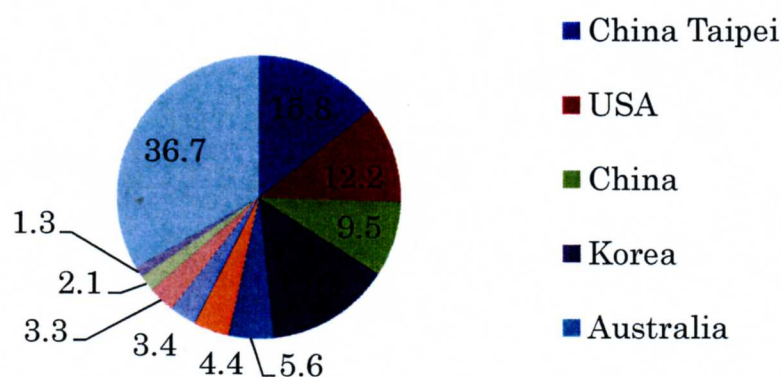
Number of tourist



8-3 Kyoto: Ratio of gender, age-specific tourists (2012)

age	total (100%)	male (37.1%)	female (62.9%)
under 20	2.7	1.8	3.3
20-	21.1	18.1	22.8
30-	15.3	16.1	14.8
40-	16.0	16.1	15.9
50-	21.4	22.4	20.8
over 60-	23.5	25.5	22.4
total	100.0	100.0	100.0

8-4 Kyoto: Distribution by source of tourist (2012)



8-5 Fushimi: the tourist stream is significantly Japanese (check for signage in international languages) and perhaps favoured by families and middle aged/senior visitors. There are no events centres or major malls, but a strong appeal based on awareness of cultural history, the importance of water, the traditional shopping venue, local shrines and temples and the proximity to the city and facilities of Kyoto. The Gokono-miya-jinja shrine to the importance of water in the sake industry is particularly notable and popular with tourists.