

The background features a complex network diagram with nodes and connecting lines. A large, prominent network structure is on the left, while two smaller, more spherical network clusters are positioned in the upper right quadrant. The overall aesthetic is technical and modern, with a light gray color palette.

Chapter 2 :

**Hospital
Medical Device
(Mammogram
Machine)**

CHAPTER 2 | HOSPITAL MEDICAL DEVICE (MAMMOGRAM MACHINE)

For this NHEWS (Hospital) report, we feature mammogram machines in discussing the availability of hospital medical devices. There were 146 mammogram machines in 2012, and 150 in 2013; the overall increase of four machines was contributed by an addition of five machines in the private sector, minus one machine from the public sector. About two thirds of hospital mammogram machines in the country were found in the private hospitals. [Table 2.1]

Both years saw a density of about 72 mammogram machines per million population of women aged 50-69 years in the country [Table 2.1]. The population denominator for this density calculation was adopted from the World Health Organization (WHO)¹ and Organisation for Economic Co-operation and Development (OECD)² reporting standard, indicating their target population for breast cancer screening programme. We feature this age group of female population in the interest of comparing our data with relevant international data. The latest available WHO data on mammogram machines density in most countries around the world is for the year 2010¹. Our neighbour Thailand, which shares similar economic status to us, had 30.8 mammogram machines per million women aged 50-69 years; meanwhile Singapore, of high income economy had 143.9. Other high income countries such as Japan and New Zealand, observed a ratio of 225.9 and 227.9 each¹.

Besides the 50-69 years age group, we are also reporting our data in reference to the female population of 40-74 years. Malaysian Management of Breast Cancer Clinical Practice Guideline (CPG)³ recommends screening mammography for women from the age 50-74 years. In addition, the CPG³ also recommends that women aged 40-49 years should not be denied screening mammography if they so desire. Furthermore, female breast cancer incidence in Malaysia demonstrates a higher increase from 40 years and above^{4,5}. Overall age-standardised incidence of female breast cancer was 46.2 per 100,000 population in 2003⁴, and 39.3 per 100,000 population in 2006⁵. Age specific incidence for both years saw a higher incidence starting from the age group 40-49 years (111.9 per 100,000 population in 2003, and 88.1 per 100,000 population in 2006), with a peak in 50-59 years age group (159.8 per 100,000 population in 2003, and 142.7 per 100,000 population in 2006)^{4,5}. We also speculate that higher health-seeking behaviour may be a factor in promoting screening mammography in the 40-49 years age group. Going by the aforementioned arguments, we conclude that the 40-74 years age group would be a better suited target population for our local context.

Predictably, we observed density of mammogram machines per women aged 40-74 years to be lower than the density per women aged 50-69 years. For both 2012 and 2013, there were 37 mammogram machines per million women aged 40-74 years. This demonstrates reduced availability of such facility to the population by almost half than the earlier density per women aged 50-69 years [Table 2.1]. Hence, shortage of facility availability may in reality be more substantial than such shortage that is highlighted through comparison with international standards (which is limited by dissimilarities in demography, morbidity, and health systems).

Over the two-year period, availability of mammogram machine consistently surpassed the national average of 37 per million women aged 40-74 years in three locations i.e. Klang Valley (54-57), Negeri Sembilan (50-51), and Melaka (54-55). Meanwhile, two other locations consistently recorded values well below the national average i.e. Kelantan (13), and Sabah & WP Labuan (11-12). Density of mammogram machines differed by 1-3 PMP from 2012 to 2013 for most states/locations; except for Pulau Pinang- differing by 6 PMP (from 38 to 44 PMP). [Table 2.1]

Although data on the number of mammography (total and screening) performed were captured within the 'Activities' chapter of the NHEWS (Hospital) survey, we shall present the findings here to allow fluidity of discussion regarding the topic. Total number of mammography increased by 26,477 (15%) from 2012 to 2013. For both years, almost four times more mammographies were performed in the private sector compared with the public sector; consistent with the higher availability of mammogram machines in the private sector i.e. almost twice the amount in the public sector. Overall, screening mammography amounted to about two thirds of total mammography performed in both 2012 and 2013; largely contributed by the private sector. Majority (75%-77%) of mammographies performed in the private sector were screening in nature. Meanwhile in the public sector, most (78%-80%) mammographies were diagnostic. Such observation is uniform across all states in the country except for Terengganu, which had zero screening mammography in its sole

private hospital. [Table 2.2]

We attempted to estimate the rate of screening mammography performed for our selected target population (women aged 40-74 years). Data on screening mammography that we captured were outputs of hospitals, therefore patient details of each mammography were not gathered. As such we cannot be certain that all screening mammographies being reported were indeed performed for only women who fell into the specific age group. However we employ the assumption that most screening mammographies would be performed for said population of women and a negligible number would be contributed by screening mammographies of women out of the age range. This assumption shares common ground with observations made by the National Health and Morbidity Survey (NHMS) 2011 ^{6,7}. In NHMS 2011, a sample population of women aged 40 years and above were surveyed via a face-to-face individual interview to determine the prevalence of screening mammography in said population within 12 months prior to the survey⁶. The findings⁷ are presented below:

Table 2: Estimated Number and Proportion of Women Aged 40 Years and Above Who Underwent Screening Mammography Within 12 Months Prior to the NHMS 2011.

Age Group	Number of Women Who Reported to Have Undergone Screening Mammography	Estimated Population*	Proportion of Estimated Population Out of the Total Estimated Population (%)‡
40-44	81	73,426	27.2
45-49	85	64,859	24.1
50-54	73	57,800	21.4
55-59	52	30,490	11.3
60-64	20	15,079	5.6
65-69	7	6,886	2.6
70-74	12	16,321	6.1
75+	6	4,637	1.7
40-74	330	264,861	98.3
40-75+ (Total)	336	269,498	100

*Refers to estimated number of women who underwent screening mammography in the population based on the number of women who reported to have undergone screening mammography.

‡ These proportions were not reported in the NHMS, but we calculated them by dividing the estimated population within each age group by 269, 498 (the total number of estimated population for all age groups)

Source: NHMS 2011 Vol III ⁷. Adapted from Table 2.22: Promotive and preventive activities by sociodemographic characteristics (Page 117-118).

From the proportions stated above, we estimated that 98.3% of screening mammographies captured in NHEWS (Hospital) 2012-2013 survey would have been performed for women aged 40-74 years. Furthermore, the NHMS 2011 findings appear to reciprocate with our earlier discussion regarding screening mammography in women aged 40-49 years.

In this report, we applied the proportion of each age group to our screening mammography data, and tabulated the estimated number and estimated density (per 1,000 female population) within the respective age group, by state [Table 2.3 and Table 2.4]. The density was calculated by dividing the estimated number of screening mammography by the female population of each age group in each state.

In accordance with the NHMS 2011 observation, the estimated number of screening mammography decreased with increasing age (categorised into five-year intervals within the 40-74 years age group). However, an exception applies to the last five-year interval (70-74 years) for which the number increased from that of the preceding five-year interval. Nonetheless, this pattern did not necessarily hold for the estimated density of screening mammography. Our estimation showed that on average, screening occurred at almost similar rates across the 40-44 year, 45-49 years, and 50-54 years age groups (~33 per 1,000 women of respective age group in 2012, and ~39 per 1,000 women

of respective age group in 2013). For subsequent age groups, the pattern observed in estimated number of screening mammography also held true for the estimated density. Overall, we estimated screening mammography rate per 1,000 women aged 40-74 years to be 28 women for 2012, and 32 women for 2013. From this, a 16.4% increase of screening rate over two years can be observed. [Table 2.3 and Table 2.4]

A general observation that we noticed is that the higher the density of mammogram machines; the higher the density of screening mammography. This may translate into: the more available mammogram machines are to the population; the higher the screening rate is. We observed higher estimated screening rates than the national average for both years in Klang Valley, Negeri Sembilan, Melaka, Pulau Pinang, and Sarawak (34-62 per 1,000 women aged 40-74 years in 2012, and 39-67 women aged 40-74 years in 2013) [Table 2.3 and Table 2.4]. Except for Sarawak, in which availability of mammogram machines was near that of the national average; each of the remaining states recorded mammogram machine availability that was higher than the national average [Table 2.1]. In contrast, over the two-year period, four states (Kelantan, Sabah & WP Labuan, Perlis, and Terengganu) consistently showed estimated screening rates of below 10 per 1,000 women aged 40-74 years [Table 2.3 and Table 2.4]. Kelantan and Sabah & WP Labuan each reported low availability of mammogram machines compared with the national average, while Perlis and Terengganu each observed availability that was approximate to the national average [Table 2.1].

Nonetheless, we acknowledge that influences on the screening rate are multifactorial. For example, in areas that are more urbanised, and have denser population; health promotion can more effectively reach the masses; therefore may encourage a higher uptake of screening mammography. Moreover, areas with higher population density and urbanisation level may lead to higher mammogram machine availability due to higher health demands, and in turn promote higher screening rates. Besides that, cultural influences also exist, which may affect receptiveness of certain populations to screening mammography. We take note that Selangor, WP Putrajaya, WPKL, Pulau Pinang, and Melaka are among the most densely populated areas (493-6,891 persons per square kilometre) with urbanisation level of each state exceeding the national average of 71%⁸. In contrast, Kelantan, Sabah, and Terengganu are among the least densely populated areas (44-102 persons per square kilometre) with urbanisation level below 71% each⁸.

In principle, the rate of screening mammography increased over time (2012-2013); although we noted a few states that observed dissimilar pattern. For example, Pulau Pinang saw a decrease in screening mammography (from 62 to 49 per 1,000 women aged 40-74 years), despite an increasing availability of mammogram machines. We also found Negeri Sembilan to observe decreasing screening rate (from 55 to 47 per 1,000 women aged 40-74 years), however with mammogram machine availability remaining almost unchanged. An interesting finding is that Kelantan observed a four-fold increase in screening rate with similar mammogram machine availability over the two years; notwithstanding its low availability of mammogram machines compared with the national average. [Table 2.1, Table 2.3, and Table 2.4]

Internationally, screening rate for mammography is reported as percentage of women aged 50-69 years screened. OECD countries reported an average of 61.5% of women aged 50-69 years screened in 2011². Most developed nations have population-based screening mammography programmes, for which target screening rates are set. According to the European Union⁹ guidelines, the desirable target screening rate of such programmes is 75%, and the acceptable target is 70%. In Malaysia, population-based screening mammography programme is not yet available, therefore such target screening rate would be inapplicable. However, our attempt in estimating the screening rate for our target population under current practice may provide a baseline assessment for future planning.

Limitation:

1. Our data features mammography facilities and activities specific to hospital settings, thereby may not represent the national scenario. The country has stand-alone diagnostic centres and screening programmes running outside the hospital settings e.g.
 - a. The subsidised screening mammography programme organised by the National Population and Family Development Board (Lembaga Penduduk dan Pembangunan Keluarga Negara

- (LPPKN)), which may involve hospital and non-hospital settings¹⁰
- b. Mobile breast screening programme organised by the National Cancer Council (Majlis Kanser Negara (MAKNA))¹¹
 - c. Screening mammography services offered by the Cancer & Health Screening Clinic of the National Cancer Society Malaysia (NCSM)¹²

References:

1. World Health Organization. Global Health Observatory Data Repository, Total density per million females aged from 50 to 69 years old: Mammography units [Internet]. Geneva: World Health Organization; 2014 [cited 2014 Oct 16]. Available from: <http://apps.who.int/gho/data/node.main.510?lang=en>.
2. Organisation for Economic Cooperation and Development. Health at a Glance 2013: OECD Indicators., Mammography screening in women aged 50-69, 2001 to 2011 (or nearest year) [Internet]. Organisation for Economic Cooperation and Development; 2013 [cited 2014 Oct 16]. Available from: http://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2013/mammography-screening-in-women-aged-50-69-2001-to-2011-or-nearest-year_health_glance-2013-graph117-en.
3. Ministry of Health Malaysia, Academy of Medicine Malaysia. Clinical Practice Guidelines Management of Breast Cancer. 2nd ed. Putrajaya; 2010 [cited 2014 Oct 16]. Available from: <http://www.acadmed.org.my/index.cfm?&menuid=67>.
4. GCC Lim, Y Halimah, editors. Second Report of the National Cancer Registry. Cancer Incidence in Malaysia 2003. National Cancer Registry. Kuala Lumpur 2004. [cited 2015 Jan 29]. Available from <http://www.crc.gov.my/wp-content/uploads/documents/report/2nd%20National%20Cancer%20Registry.pdf>
5. Omar ZA, Mohd Ali Z, Ibrahim Tamin NS, editors. Malaysian Cancer Statistics- Data and Figure Peninsular Malaysia 2006. National Cancer Registry, Ministry of Health Malaysia. Putrajaya 2006. [cited 2015 Jan 29]. Available from http://www.moh.gov.my/images/gallery/Report/Cancer/MalaysiaCancerStatistics_2006.pdf
6. Institute for Public Health (IPH). National Health and Morbidity Survey 2011 (NHMS 2011). Vol. 1: Methodology and General Findings. Kuala Lumpur; 2011 [cited 2015 Jan 29].
7. Institute for Public Health (IPH). National Health and Morbidity Survey 2011 (NHMS 2011). Vol. III: Healthcare Demand And Out-of-Pocket Health Expenditure. Kuala Lumpur; 2011 [cited 2015 Jan 29].
8. Department of Statistics Malaysia. Population Distribution and Basic Demographic Characteristics 2010. Putrajaya; 2010 [cited 2015 Feb 2]. Available from http://www.statistics.gov.my/portal/download_Population/files/census2010/Taburan_Penduduk_dan_Ciri-ciri_Asas_Demografi.pdf
9. Perry N, Broeders M, de Wolf C, Tornberg S, Holland T, von Karsa L, editors. European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis. 4th ed. Luxembourg: Office for Official Publications of the European Communities; 2006 [cited 2014 Dec 08]. Available from <http://www.euref.org/european-guidelines>.
10. National Population and Family Development Board. Garis Panduan Pelaksanaan Program Subsidi Ujian Mamogram LPPKN. Kuala Lumpur; 2007 [cited 2015 Jan 29]. Available from http://www.lppkn.gov.my/index.php?view=download&alias=92-garis-panduan-pelaksanaan-program-subsidi-ujian-mamogram-lppkn&category_slug=emamogram&option=com_docman&Itemid=558&lang=en
11. Majlis Kanser Negara [Internet]. Kuala Lumpur: Majlis Kanser Negara; [cited 2015 Feb 2]. Available from <http://makna.org.my/services/mobile-screening/>
12. National Cancer Society Malaysia [Internet]. Kuala Lumpur: National Cancer Society Malaysia; [cited 2015 Feb 2]. Available from <http://www.cancer.org.my/centres/cancer-health-screening-clinic/>

Special Acknowledgement:

We would like to express our utmost appreciation to Dr. Evelyn Ho (Consultant Clinical Radiologist) who provided us with invaluable insights during the revision process of this chapter.

Table 2.1: Number & Density of Mammogram Machines in Acute Curative Hospitals in Malaysia by State & Sector, 2012-2013

State	Sector *	Total Mammogram Machines					
		2012			2013		
		Number	PMP (women aged 50-69 years)	PMP (women aged 40-74 years)	Number	PMP (women aged 50-69 years)	PMP (women aged 40-74 years)
Malaysia	Public	53	-	-	52	-	-
Malaysia	Private	93	-	-	98	-	-
Malaysia	Total	146	72.22	36.85	150	71.51	36.93
Perlis	Public	1	-	-	1	-	-
Perlis	Private	na	-	-	na	-	-
Perlis	Total	1	49.26	27.03	1	48.54	27.03
Kedah	Public	5	-	-	5	-	-
Kedah	Private	4	-	-	4	-	-
Kedah	Total	9	56.07	29.69	9	54.12	29.13
Kedah & Perlis	Public	6	-	-	6	-	-
Kedah & Perlis	Private	4	-	-	4	-	-
Kedah & Perlis	Total	10	55.31	29.40	10	53.50	28.90
Pulau Pinang	Public	2	-	-	2	-	-
Pulau Pinang	Private	8	-	-	10	-	-
Pulau Pinang	Total	10	72.89	38.37	12	83.27	44.15
Perak	Public	6	-	-	6	-	-
Perak	Private	6	-	-	6	-	-
Perak	Total	12	54.55	30.50	12	53.12	30.21
Selangor	Public	8	-	-	8	-	-
Selangor	Private	22	-	-	22	-	-
Selangor	Total	30	88.85	42.58	30	84.04	40.68
WP Putrajaya	Public	2	-	-	2	-	-
WP Putrajaya	Private	na	-	-	na	-	-
WP Putrajaya	Total	2	714.29	322.58	2	666.67	303.03
WPKL	Public	6	-	-	5	-	-
WPKL	Private	17	-	-	20	-	-
WPKL	Total	23	191.11	91.99	25	201.52	98.36
Selangor & WP Putrajaya & WPKL	Public	16	-	-	15	-	-
Selangor & WP Putrajaya & WPKL	Private	39	-	-	42	-	-
Selangor & WP Putrajaya & WPKL	Total	55	119.38	53.78	57	118.17	57.30

Abbreviation: - not available; na - not applicable; PMP - Per Million Population
 Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.

* Public sector refers to MOH, University and MOD hospitals.

For population data, please refer Appendix 3: Table A3.3 & Table A3.4

Table 2.1 [continued]: Number & Density of Mammogram Machines in Acute Curative Hospitals in Malaysia by State & Sector, 2012-2013

State	Sector *	Total Mammogram Machines					
		2012			2013		
		Number	PMP (women aged 50-69 years)	PMP (women aged 40-74 years)	Number	PMP (women aged 50-69 years)	PMP (women aged 40-74 years)
Negeri Sembilan	Public	2	-	-	2	-	-
Negeri Sembilan	Private	6	-	-	6	-	-
Negeri Sembilan	Total	8	94.12	51.31	8	90.60	50.31
Melaka	Public	2	-	-	2	-	-
Melaka	Private	5	-	-	5	-	-
Melaka	Total	7	104.01	54.90	7	100.86	54.01
Johor	Public	5	-	-	5	-	-
Johor	Private	10	-	-	9	-	-
Johor	Total	15	61.93	31.78	14	56.17	29.15
Pahang	Public	3	-	-	3	-	-
Pahang	Private	3	-	-	3	-	-
Pahang	Total	6	55.00	29.75	6	52.86	29.11
Terengganu	Public	3	-	-	3	-	-
Terengganu	Private	1	-	-	1	-	-
Terengganu	Total	4	56.26	28.96	4	54.20	28.39
Kelantan	Public	2	-	-	2	-	-
Kelantan	Private	1	-	-	1	-	-
Kelantan	Total	3	24.47	13.02	3	23.66	12.78
Sarawak	Public	4	-	-	4	-	-
Sarawak	Private	8	-	-	9	-	-
Sarawak	Total	12	69.20	35.33	13	73.86	37.89
Sabah	Public	2	-	-	2	-	-
Sabah	Private	2	-	-	2	-	-
Sabah	Total	4	27.17	12.10	4	25.66	11.55
WP Labuan	Public	0	-	-	0	-	-
WP Labuan	Private	na	-	-	na	-	-
WP Labuan	Total	0	0	0	0	0	0
Sabah & WP Labuan	Public	2	-	-	2	-	-
Sabah & WP Labuan	Private	2	-	-	2	-	-
Sabah & WP Labuan	Total	4	26.44	11.76	4	24.97	11.23

Abbreviation: - not available; na - not applicable; PMP - Per Million Population
 Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.
 * Public sector refers to MOH, University and MOD hospitals.
 For population data, please refer Appendix 3: Table A3.3 & TableA3.4

Table 2.2: Number & Density of Total Mammography Performed, and Number & Percentage of Screening Mammography Performed in Acute Curative Hospitals in Malaysia by State & Sector, 2012-2013

State	Sector *	Total Mammography Performed				Screening Mammography Performed			
		2012		2013		2012		2013	
		Number	Per 1,000 population (women aged 40-74 years)	Number	Per 1,000 population (women aged 40-74 years)	Number	Percentage out of total mammography performed (%)	Number	Percentage out of total mammography performed (%)
Malaysia	Public	37,765	-	40,772	-	7,463	19.76	9,109	22.34
Malaysia	Private	137,832	-	161,302	-	103,451	75.06	123,624	76.64
Malaysia	Total	175,597	44.38	202,074	49.69	110,914	63.16	132,733	65.68
Perlis	Public	425	-	486	-	155	36.47	212	43.62
Perlis	Private	na	-	na	-	na	na	na	na
Perlis	Total	425	11.49	486	13.14	155	36.47	212	43.62
Kedah	Public	1,851	-	2,014	-	863	46.62	1,035	51.39
Kedah	Private	7,623	-	9,119	-	5,538	72.65	6,504	71.32
Kedah	Total	9,474	31.26	11,133	36.03	6,401	67.56	7,539	67.72
Kedah & Perlis	Public	2,276	-	2,500	-	1,018	44.73	1,247	49.88
Kedah & Perlis	Private	7,623	-	9,119	-	5,538	72.65	6,504	71.32
Kedah & Perlis	Total	9,899	29.11	11,619	33.58	6,556	66.23	7,751	66.71
Pulau Pinang	Public	2,498	-	2,640	-	247	9.89	276	10.45
Pulau Pinang	Private	21,118	-	18,590	-	16,205	76.74	13,217	71.10
Pulau Pinang	Total	23,616	90.62	21,230	79.42	16,452	69.66	13,493	63.56
Perak	Public	3,018	-	3,222	-	424	14.03	449	13.94
Perak	Private	8,081	-	11,159	-	6,919	85.62	9,394	84.18
Perak	Total	11,099	28.21	14,381	36.21	7,343	66.15	9,843	68.44
Selangor	Public	5,480	-	6,503	-	1,615	29.47	2,114	32.51
Selangor	Private	19,327	-	26,191	-	12,530	64.83	17,431	66.55
Selangor	Total	24,807	35.34	32,694	44.68	14,145	57.02	19,545	59.78
WP Putrajaya	Public	1,141	-	1,251	-	360	31.55	400	31.97
WP Putrajaya	Private	na	-	na	-	na	na	na	na
WP Putrajaya	Total	1,141	184.03	1,251	189.55	360	31.55	400	31.97
WPKL	Public	10,192	-	9,816	-	1,061	10.41	1,174	11.96
WPKL	Private	26,955	-	31,283	-	19,800	73.46	23,728	75.85
WPKL	Total	37,147	149.01	41,099	160.10	20,861	56.16	24,902	60.59
Selangor & WP Putrajaya & WPKL	Public	16,813	-	17,570	-	3,036	18.06	3,688	20.99
Selangor & WP Putrajaya & WPKL	Private	46,282	-	57,474	-	32,330	69.86	41,159	71.61
Selangor & WP Putrajaya & WPKL	Total	63,095	61.89	75,044	75.42	35,366	56.05	44,847	59.76

Abbreviation: - not available; na- not applicable; PMP- Per Million Population
Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.

* Public sector refers to MOH, University and MOD hospitals.

For population data, please refer Appendix 3: TableA3.4

Table 2.2 [continued]: Number & Density of Total Mammography Performed, and Number & Percentage of Screening Mammography Performed in Acute Curative Hospitals in Malaysia by State & Sector, 2012-2013

State	Sector *	Total Mammography Performed			Screening Mammography Performed				
		2012		2013	2012		2013		
		Number	Per 1,000 population (women aged 40-74 years)	Number	Per 1,000 population (women aged 40-74 years)	Number	Percentage out of total mammography performed (%)	Number	Percentage out of total mammography performed (%)
Negeri Sembilan	Public	1,628	-	1,686	-	260	15.96	336	19.91
Negeri Sembilan	Private	9,055	-	8,299	-	8,477	93.62	7,289	87.83
Negeri Sembilan	Total	10,683	68.53	9,985	62.80	8,737	81.78	7,625	76.36
Melaka	Public	1,368	-	1,445	-	356	26.02	327	22.63
Melaka	Private	7,844	-	11,579	-	4,577	58.35	8,514	73.53
Melaka	Total	9,212	72.25	13,024	100.49	4,933	53.55	8,841	67.88
Johor	Public	3,256	-	3,611	-	335	10.30	365	10.12
Johor	Private	13,058	-	20,290	-	8,188	62.71	14,616	72.03
Johor	Total	16,314	34.56	23,901	49.26	8,523	52.25	14,981	62.68
Pahang	Public	1,268	-	1,408	-	340	26.81	442	31.39
Pahang	Private	5,215	-	6,597	-	5,102	97.83	6,475	98.15
Pahang	Total	6,483	32.14	8,005	38.84	5,442	83.94	6,917	86.41
Terengganu	Public	1,264	-	1,491	-	899	71.12	1,160	77.80
Terengganu	Private	47	-	444	-	-	-	-	-
Terengganu	Total	1,311	9.49	1,935	13.73	899	68.57	1,160	59.95
Kelantan	Public	573	-	1,126	-	102	17.78	374	33.20
Kelantan	Private	264	-	907	-	137	51.89	733	80.82
Kelantan	Total	837	3.63	2,033	8.66	239	28.54	1,107	54.44
Sarawak	Public	3,418	-	3,683	-	357	10.44	373	10.13
Sarawak	Private	16,212	-	14,059	-	13,724	84.65	13,662	97.17
Sarawak	Total	19,630	57.79	17,742	50.74	14,081	71.73	14,035	79.11
Sabah	Public	385	-	390	-	89	23.03	72	18.46
Sabah	Private	3,033	-	2,785	-	2,254	74.31	2,061	73.99
Sabah	Total	3,418	10.34	3,175	9.17	2,343	68.53	2,133	67.17
WP Labuan	Public	na	na	na	na	na	na	na	na
WP Labuan	Private	na	na	na	na	na	na	na	na
WP Labuan	Total	na	na	na	na	na	na	na	na
Sabah & WP Labuan	Public	385	-	390	-	89	23.03	72	18.46
Sabah & WP Labuan	Private	3,033	-	2,785	-	2,254	74.31	2,061	73.99
Sabah & WP Labuan	Total	3,418	10.05	3,175	8.91	2,343	68.53	2,133	67.17

Abbreviation: - not available; na- not applicable; PMP- Per Million Population
 Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.
 * Public sector refers to MOH, University and MOD hospitals.
 For population data, please refer Appendix 3: TableA3.4

Table 2.3: Estimated Number & Density of Screening Mammography Performed for Women Aged 40-74 Years, in Acute Curative Hospitals in Malaysia by State, 2012 †

State	Screening Mammography Performed, 2012																
	Number*	40-74 years						Age Group of Female Population						70-74 years			
		Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population	Estimated number in female population †	Per 1,000 female population		
Malaysia	110,914	109,028	27.55	30,169	33.27	26,730	32.75	23,736	33.64	12,533	22.06	6,211	14.05	2,884	9.50	6,766	31.50
Perlis	155	152	4.12	42	6.02	37	5.12	33	4.95	18	3.02	9	1.89	4	1.26	9	3.94
Kedah	6,401	6,292	20.76	1,741	27.42	1,543	25.67	1,370	25.00	723	15.56	358	10.10	166	7.02	390	20.55
Kedah & Perlis	6,556	6,445	18.95	1,783	25.29	1,580	23.44	1,403	22.81	741	14.17	367	9.16	170	6.34	400	18.69
Pulau Pinang	16,452	16,172	62.06	4,475	78.92	3,965	78.20	3,521	78.76	1,859	48.54	921	29.06	428	19.01	1,004	62.72
Perak	7,343	7,218	18.35	1,997	27.74	1,770	24.24	1,571	22.81	830	13.56	411	7.79	191	5.15	448	15.77
Selangor	14,145	13,904	19.81	3,847	20.84	3,409	22.38	3,027	24.69	1,598	17.30	792	10.65	368	7.82	863	30.17
WP Putrajaya	360	354	57.08	98	54.40	87	57.84	77	51.36	41	45.20	20	67.20	9	93.60	22	219.60
WPKL	20,861	20,506	82.26	5,674	90.64	5,028	91.24	4,464	105.04	2,357	68.73	1,168	45.63	542	30.82	1,273	109.70
Selangor & WP Putrajaya & WPKL	35,366	34,765	34.10	9,620	38.63	8,523	40.80	7,568	45.43	3,996	31.32	1,981	19.75	920	14.21	2,157	53.53
Negeri Sembilan	8,737	8,589	55.09	2,377	76.66	2,106	68.37	1,870	63.38	987	39.65	489	26.45	227	18.77	533	58.57
Melaka	4,933	4,849	38.03	1,342	49.88	1,189	46.26	1,056	47.55	557	29.97	276	17.71	128	11.77	301	39.59
Johor	8,523	8,379	17.75	2,318	21.45	2,054	21.40	1,824	21.71	963	13.90	477	8.97	222	6.21	520	20.23
Pahang	5,442	5,349	26.52	1,480	36.02	1,312	32.46	1,165	30.57	615	20.23	305	12.49	141	8.73	332	29.91
Terengganu	899	884	6.40	245	8.21	217	7.45	192	7.40	102	5.08	50	3.50	23	2.18	55	6.77
Kelantan	239	235	1.02	65	1.37	58	1.23	51	1.19	27	0.79	13	0.51	6	0.32	15	1.07
Sarawak	14,081	13,841	40.75	3,830	49.10	3,393	49.11	3,013	50.47	1,591	32.67	789	20.92	366	13.41	859	44.74
Sabah	2,343	2,303	6.96	637	6.80	565	7.47	501	8.41	265	6.38	131	4.93	61	3.12	143	10.07
WP Labuan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Sabah & WP Labuan	2,343	2,303	6.77	637	6.61	565	7.25	501	8.18	265	6.20	131	4.81	61	3.05	143	9.86

Abbreviation: - not available; na- not applicable

Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.

*Refers to the total number of screening mammography as captured via the NHEWS (Hospital) 2012-2013 survey.

† Refers to the estimated number of screening mammography performed on women of the respective age groups, out of the total screening mammography; having applied the proportion observed in the NHMS 2011 (please refer to the text for further description).

For population data, please refer Appendix 3: Table A3.4 until Table A3.11

Table 2.4: Estimated Number & Density of Screening Mammography Performed for Women Aged 40-74 Years, in Acute Curative Hospitals in Malaysia by State, 2013 ‡

State	Screening Mammography Performed, 2013															
	Number*	Age Group of Female Population														
		40-74 years	40-44 years		45-49 years		50-54 years		55-59 years		60-64 years		65-69 years		70-74 years	
Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	Estimated number in female population ‡	Per 1,000 female population	
Malaysia	132,733	32.08	36,103	39.44	31,989	38.22	28,405	39.29	14,999	25.22	7,433	16.30	3,451	10.56	8,097	37.80
Perlis	212	5.63	58	8.61	51	6.90	45	6.77	24	4.06	12	2.53	6	1.67	13	5.62
Kedah	7,539	23.98	2,051	32.34	1,817	29.69	1,613	29.07	852	17.60	422	11.38	196	7.75	460	25.41
Kedah & Perlis	7,751	22.02	2,108	30.08	1,868	27.23	1,659	26.67	876	16.13	434	10.38	202	7.05	473	23.18
Pulau Pinang	13,493	49.62	3,670	63.94	3,252	62.41	2,887	63.46	1,525	38.60	756	23.25	351	14.50	823	51.12
Perak	9,843	24.36	2,677	38.03	2,372	32.23	2,106	30.35	1,112	17.74	551	10.30	256	6.35	600	21.99
Selangor	19,545	26.26	5,316	27.80	4,710	29.81	4,183	32.73	2,209	22.58	1,094	14.52	508	9.55	1,192	42.13
WP Putrajaya	400	59.58	109	57.26	96	60.25	86	57.07	45	41.09	22	74.67	10	104.00	24	244.00
WPKL	24,902	95.36	6,773	111.77	6,001	102.24	5,329	121.95	2,814	78.16	1,395	52.03	647	34.44	1,519	125.54
Selangor & WP Putrajaya & WPKL	44,847	44.31	12,198	48.08	10,808	49.51	9,597	55.48	5,068	37.57	2,511	24.50	1,166	16.17	2,736	67.55
Negeri Sembilan	7,625	47.14	2,074	66.90	1,838	59.66	1,632	54.94	862	33.14	427	21.90	198	15.13	465	52.26
Melaka	8,841	67.06	2,405	92.14	2,131	80.10	1,892	84.09	999	51.76	495	31.53	230	19.32	539	71.91
Johor	14,981	30.35	4,075	37.35	3,611	36.51	3,206	37.54	1,693	23.35	839	15.17	390	10.09	914	35.98
Pahang	6,917	32.99	1,881	45.12	1,667	41.47	1,480	38.15	782	24.43	387	15.62	180	10.05	422	39.43
Terengganu	1,160	8.09	316	10.59	280	9.57	248	9.30	131	6.18	65	4.33	30	2.77	71	8.74
Kelantan	1,107	1,088	4.64	301	6.41	267	5.66	237	5.40	3.47	62	2.31	29	1.43	68	4.89
Sarawak	14,035	39.45	3,818	48.14	3,382	47.84	3,004	48.60	1,586	31.72	786	20.05	365	12.85	856	42.17
Sabah	2,133	2,096	6.05	580	5.98	514	6.54	456	7.34	5.34	119	4.19	55	2.76	130	8.73
WP Labuan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Sabah & WP Labuan	2,133	2,096	5.89	580	5.81	514	6.35	456	7.13	5.20	119	4.08	55	2.69	130	8.56

Abbreviation: - not available; na- not applicable

Selangor & WP Putrajaya & WPKL are also collectively referred to as Klang Valley.

*Refers to the total number of screening mammography as captured via the NHEWS (Hospital) 2012-2013 survey.

‡ Refers to the estimated number of screening mammography performed on women of the respective age groups, out of the total screening mammography; having applied the proportion observed in the NHMS 2011 (please refer to the text for further description).

For population data, please refer Appendix 3: Table A3.4 until Table A3.11