Supplementary material for Ito Y, et al. Socioeconomic inequalities in cancer survival: A population-based study of adult patients diagnosed in Osaka, Japan, during the period 1993–2004. Acta Oncol 2014;53:1423–33.

Supplementary Table IA. One-year net survival by sex, site and deprivation group in 2001–2004.

			Deprivation group[a]									
	All cases		1st (Least deprived)		2nd		3rd		4th		5th (Most deprived)	
	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI
Men												
Oesophagus	54.4	(52.5-56.3)	57.1	(52.5–61.7)	57.8	(53.4–62.1)	54.5	(50.3–58.7)	52.8	(48.6–56.9)	51.4	(47.7–55.2)
Stomach	70.6	(69.8-71.5)	74.4	(72.5–76.2)	72.9	(71.0–74.8)	70.6	(68.7–72.5)	69.9	(68.1–71.8)	66.3	(64.5–68.1)
Colorectum	82.1	(81.3-83.0)	85.4	(83.5–87.3)	82.1	(80.1–84.1)	82.6	(80.7–84.6)	82.1	(80.2–83.9)	79.1	(77.2–81.1)
Liver	62.2	(61.0-63.3)	64.1	(61.1–67.2)	63.4	(60.6–66.2)	63.7	(61.1–66.4)	60.8	(58.2–63.3)	60.1	(57.8–62.5)
Pancreas	24.9	(23.1-26.7)	25.5	(21.2–29.9)	22.2	(18.3–26.1)	25.0	(20.8–29.1)	25.4	(21.6–29.2)	26.5	(22.4–30.5)
Larynx	93.3	(91.1-95.6)	93.6	(87.8–99.5)	90.3	(84.2–96.5)	94.6	(89.8–99.3)	92.5	(87.7–97.4)	94.4	(90.5–98.4)
Lung	48.8	(47.8-49.7)	53.7	(51.4–56.0)	51.2	(48.9–53.4)	48.7	(46.5–50.8)	46.6	(44.5–48.7)	45.4	(43.5–47.4)
Prostate	94.2	(93.2-95.2)	97.6	(95.9–99.2)	93.0	(90.6–95.3)	95.5	(93.4–97.6)	92.7	(90.4–95.0)	91.6	(89.1–94.2)
Bladder	86.7	(84.8-88.5)	90.9	(87.3–94.5)	86.2	(82.2–90.2)	85.2	(81.0–89.4)	86.9	(82.7–91.0)	84.2	(79.8–88.5)
Women												
Oesophagus	60.3	(56.2–64.5)	66.0	(55.5–76.5)	62.0	(52.3–71.7)	61.0	(52.1–69.9)	55.8	(46.9–64.8)	59.1	(50.6–67.6)
Stomach	68.9	(67.6–70.1)	69.6	(66.6–72.6)	67.2	(64.4–70.1)	68.7	(65.9–71.5)	68.4	(65.8–71.1)	70.4	(67.8–72.9)
Colorectum	78.9	(77.8–79.9)	81.6	(79.2–83.9)	77.9	(75.3–80.5)	78.6	(76.3–80.9)	78.0	(75.8–80.2)	78.7	(76.5–80.9)
Liver	60.1	(58.3–61.8)	59.6	(54.8–64.3)	60.7	(56.3–65.2)	58.5	(54.7–62.2)	61.5	(57.8–65.2)	60.0	(56.5–63.6)
Pancreas	24.8	(22.8–26.8)	24.3	(19.6–29.0)	23.9	(19.4–28.5)	26.1	(21.6–30.6)	26.4	(21.9–30.9)	23.3	(19.2–27.3)
Lung	58.2	(56.7–59.6)	60.2	(56.6–63.9)	58.6	(55.1–62.0)	60.7	(57.5–64.0)	57.9	(54.7–61.2)	54.5	(51.5–57.6)
Breast	97.7	(97.4–98.1)	97.9	(97.1–98.7)	97.7	(96.9–98.6)	97.8	(97.0–98.6)	98.3	(97.6–99.1)	96.9	(96.0–97.8)
Cervix+NOS	87.7	(85.9–89.4)	90.2	(86.3–94.2)	88.4	(84.4–92.4)	85.3	(81.0–89.7)	88.1	(84.3–91.8)	86.8	(83.2–90.4)
Corpus uteri	89.1	(87.1–91.0)	87.6	(83.2–91.9)	89.6	(85.4–93.8)	89.3	(85.0–93.5)	88.8	(84.4–93.2)	90.1	(86.0–94.2)
Ovary	73.8	(71.3–76.3)	81.6	(76.7–86.6)	76.4	(70.6–82.2)	72.4	(66.8–78.0)	68.7	(62.6–74.8)	69.9	(64.3–75.6)
Bladder	76.7	(72.7–80.8)	82.1	(73.3–90.8)	79.8	(71.0–88.7)	74.0	(64.6–83.4)	65.8	(56.0–75.6)	82.1	(74.2–90.0)

NS, net survival (%).

[a]Deprivation group was categorised by the deprivation index from 1st quintile as the least deprived group to 5th quintile as the most deprived group.

Supplementary Table IB. Five-year net survival by sex, site and deprivation group in 2001–2004..

			Deprivation group[a]									
	All cases		1st (Least deprived)		2nd		3rd		4th		5th (Most deprived)	
	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI
Men												
Oesophagus	23.4	(21.7–25.0)	26.1	(21.8–30.4)	28.6	(24.3–32.9)	22.7	(19.0–26.5)	22.0	(18.3–25.7)	19.4	(16.2–22.5)
Stomach	49.6	(48.6–50.6)	54.3	(51.9–56.7)	51.4	(49.0–53.8)	49.7	(47.4–51.9)	50.4	(48.1–52.7)	43.4	(41.3–45.5)
Colorectum	57.8	(56.5–59.0)	64.8	(61.8–67.7)	61.0	(58.0–64.0)	56.3	(53.4–59.1)	55.1	(52.4–57.8)	53.4	(50.8–56.1)
Liver	22.8	(21.7–23.9)	27.9	(24.8–31.0)	22.5	(19.9–25.2)	21.6	(19.1–24.0)	22.7	(20.4–25.1)	21.0	(18.9–23.0)
Pancreas	4.1	(3.2–4.9)	2.9	(1.1–4.6)	3.9	(1.9–5.8)	5.2	(3.0–7.4)	5.0	(2.9–7.1)	3.2	(1.4–4.9)
Larynx	72.6	(68.3–77.0)	88.4	(78.1–98.8)	68.1	(57.4–78.8)	76.8	(67.1–86.5)	66.9	(57.3–76.4)	69.5	(61.3–77.7)
Lung	16.6	(15.8–17.4)	20.8	(18.7–22.8)	18.2	(16.4–20.1)	16.3	(14.6–18.0)	15.5	(13.8–17.1)	13.6	(12.2–15.1)
Prostate	79.6	(77.6–81.6)	88.5	(84.6–92.3)	77.4	(72.8–82.1)	84.1	(79.7–88.5)	75.3	(70.8–79.8)	71.4	(66.5–76.2)
Bladder	67.7	(64.7–70.7)	76.3	(69.8–82.8)	68.1	(61.8–74.3)	66.3	(59.8–72.8)	64.8	(57.9–71.7)	63.0	(55.9–70.2)
Women												
Oesophagus	28.8	(24.8–32.9)	42.5	(30.8–54.1)	24.7	(15.9–33.6)	25.7	(17.3–34.1)	26.6	(18.2–35.0)	28.7	(20.4–36.9)
Stomach	47.1	(45.7–48.6)	50.0	(46.5–53.5)	46.7	(43.5–50.0)	45.5	(42.3–48.7)	46.3	(43.2–49.3)	47.6	(44.6–50.7)
Colorectum	56.6	(55.3–58.0)	61.2	(57.9–64.4)	55.4	(52.0–58.8)	55.1	(52.0–58.1)	56.4	(53.6–59.3)	55.6	(52.7–58.5)
Liver	21.1	(19.6–22.7)	21.2	(16.9–25.4)	22.2	(18.3–26.2)	19.9	(16.6–23.1)	22.3	(18.9–25.6)	20.5	(17.4–23.6)
Pancreas	4.4	(3.4–5.4)	3.7	(1.6–5.8)	4.0	(1.8–6.2)	4.4	(2.2–6.7)	6.2	(3.6–8.7)	3.7	(1.8–5.5)
Lung	27.6	(26.2–29.0)	30.0	(26.5–33.6)	29.2	(25.9–32.6)	28.4	(25.2–31.5)	26.0	(23.0–29.0)	25.5	(22.7–28.3)
Breast	85.6	(84.7–86.5)	87.3	(85.5–89.2)	85.8	(83.8–87.8)	85.1	(83.1–87.1)	84.8	(82.8–86.8)	85.0	(83.0–87.0)
Cervix+NOS	64.7	(62.1–67.4)	70.8	(64.6–77.0)	59.5	(53.3–65.7)	61.3	(55.0–67.5)	67.7	(61.9–73.4)	64.9	(59.6–70.2)
Corpus uteri	71.0	(68.1–73.9)	73.9	(67.8–79.9)	70.0	(63.5–76.5)	69.8	(63.2–76.5)	69.3	(62.6–76.0)	71.6	(65.1–78.1)
Ovary	40.8	(37.9–43.7)	48.6	(42.0–55.2)	45.8	(38.9–52.8)	35.9	(29.9–42.0)	37.8	(31.3–44.4)	36.3	(30.2–42.4)
Bladder	56.3	(50.9–61.7)	58.3	(45.9–70.7)	56.2	(44.0–68.3)	58.9	(46.8–70.9)	51.0	(39.5–62.6)	57.9	(46.0–69.8)

NS, net survival (%).
[a]Deprivation group was categorised by the deprivation index from 1st quintile as the least deprived group to 5th quintile as the most deprived group.

Supplementary Table IC. Five-year conditional net survival for one-year survivors by sex, site and deprivation group in 2001–2004.

			Deprivation group[a]									
	All cases		1st (Least deprived)		2nd		3rd		4th		5th (Most deprived)	
	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI	NS	95% CI
Men												
Oesophagus	43.8	(41.0–46.6)	46.6	(39.8–53.3)	50.5	(43.9–57.0)	42.5	(36.4–48.7)	42.1	(35.8–48.4)	38.4	(32.9–44.0)
Stomach	72.0	(70.8–73.3)	74.8	(72.1–77.5)	72.3	(69.5–75.1)	72.1	(69.4–74.8)	74.1	(71.3–76.8)	67.2	(64.5–69.9)
Colorectum	72.1	(70.8–73.5)	77.7	(74.6–80.7)	76.1	(72.9–79.4)	69.9	(66.8–73.1)	68.9	(65.9–71.9)	69.2	(66.2–72.2)
Liver	37.5	(35.8–39.1)	44.6	(40.1–49.0)	36.4	(32.4–40.3)	34.6	(30.9–38.2)	38.3	(34.7–42.0)	35.6	(32.3–38.9)
Pancreas	16.3	(12.9–19.8)	11.5	(4.7–18.2)	16.8	(8.7–25.0)	21.1	(12.7–29.4)	19.7	(12.0–27.4)	11.4	(5.2–17.7)
Larynx	79.8	(75.4–84.1)			76.9	(66.1–87.8)	82.7	(73.1–92.3)	73.9	(64.1–83.7)	75.4	(67.0–83.7)
Lung	35.0	(33.5–36.5)	39.8	(36.3–43.3)	36.6	(33.3–40.0)	34.3	(31.0–37.6)	34.2	(30.9–37.5)	30.9	(27.9–33.9)
Prostate	87.6	(85.6–89.6)	93.2	(89.5–97.0)	86.5	(81.8–91.2)	91.3	(86.9–95.6)	84.2	(79.7–88.8)	80.9	(76.0–85.9)
Bladder	80.8	(77.6–83.9)	86.6	(80.1–93.2)	81.3	(74.9–87.7)	80.5	(73.6–87.4)	77.3	(69.9–84.7)	77.6	(69.7–85.4)
Women												
Oesophagus	48.5	(42.5–54.4)	64.7	(50.3–79.2)	40.2	(27.2–53.2)	42.7	(30.3–55.2)	48.1	(35.0–61.3)	48.8	(36.6–60.9)
Stomach	69.5	(67.8–71.2)	73.0	(68.9–77.1)	70.5	(66.6–74.4)	67.3	(63.4–71.1)	68.8	(65.1–72.4)	68.8	(65.2–72.4)
Colorectum	73.0	(71.5–74.5)	76.2	(72.9–79.6)	72.4	(68.7–76.2)	71.3	(68.0–74.7)	73.6	(70.5–76.7)	71.8	(68.6–75.0)
Liver	35.7	(33.3–38.2)	36.2	(29.6–42.8)	37.3	(31.2–43.4)	34.5	(29.4–39.6)	36.6	(31.6–41.6)	34.7	(29.9–39.6)
Pancreas	17.9	(14.1–21.7)	15.3	(7.1–23.5)	16.8	(8.3–25.3)	17.2	(9.1–25.3)	23.6	(14.6–32.5)	15.9	(8.4–23.5)
Lung	48.3	(46.1–50.4)	50.6	(45.4–55.7)	50.7	(45.6–55.7)	47.4	(42.8–52.0)	45.7	(41.0–50.3)	47.6	(43.1–52.0)
Breast	88.3	(87.4–89.1)	89.8	(88.0–91.6)	88.5	(86.6–90.4)	87.7	(85.8–89.7)	86.9	(85.0–88.9)	88.5	(86.6–90.4)
Cervix+NOS	74.4	(71.7–77.0)	78.7	(72.8–84.7)	67.6	(61.3–74.0)	72.3	(65.9–78.7)	77.3	(71.7–83.0)	75.3	(70.0–80.6)
Corpus uteri	80.2	(77.5–83.0)	84.9	(79.3–90.5)	78.4	(72.1–84.6)	78.8	(72.3–85.2)	78.3	(71.8–84.7)	80.0	(73.7–86.3)
Ovary	55.6	(52.1–59.1)	59.9	(52.6–67.2)	60.3	(52.4–68.2)	49.9	(42.4–57.5)	55.5	(47.2–63.7)	52.3	(44.6–59.9)
Bladder	74.9	(68.9–80.9)	72.6	(59.3–85.9)	71.4	(58.1–84.7)	79.8	(67.0–92.7)	78.2	(64.8–91.6)	72.1	(59.0–85.2)

NS, net survival (%).
[a]Deprivation group was categorised by the deprivation index from 1st quintile as the least deprived group to 5th quintile as the most deprived group.

Supplementary Table II. Association between average one-year net survival and deprivation gap in one-year net survival.

	Sex	Coefficient	95% CI		p-value	Intercept	95% CI		p-value	R-sq	Adj-R-sq	AIC	N
One-year survival	Men	0.001	−0.075	0.077	0.980	−5.211	−10.710	0.288	0.060	0.000	−0.143	42.15	9
	Women	−0.021	−0.143	0.101	0.708	−2.549	−11.139	6.041	0.519	0.016	−0.093	57.80	11
Five-year survival	Men	−0.159	−0.253	−0.065	0.005**	−1.192	−6.834	4.449	0.633	0.695	0.652	46.35	9
	Women	−0.082	−0.212	0.049	0.190*	−2.953	−9.610	3.704	0.342	0.183	0.092	61.34	11
Conditional five-year (one-year survivor)	Men	−0.088	−0.168	−0.009	0.034	−1.273	−6.357	3.811	0.572	0.495	0.423	44.33	9
	Women	−0.144	−0.259	−0.028	0.020*	3.154	−3.883	10.191	0.337	0.468	0.408	59.77	11

*p < 0.05, **p < 0.01, ***p < 0.001.

Supplementary Table IIIA. Sensitivity analysis for the deprivation gap in one-year survival.

	(i) General Osaka life tables		(ii) Adjusted in England	(iii) 25% inflation
	%	95% CI	%	%
Men				
Oesophagus	−8.4	(−11.7, −5.1)***	−7.7	−11.2
Stomach	−8.1	(−9.4, −6.7)***	−7.1	−10.8
Colorectum	−5.0	(−6.5, −3.5)***	−3.9	−6.7
Liver	−5.9	(−7.8, −4.0)***	−5.0	−7.9
Pancreas	−2.5	(−5.5, −0.5)	−2.2	−3.3
Larynx	−3.3	(−7.0, −0.5)	−1.9	−4.3
Lung	−5.9	(−7.6, −4.2)***	−5.2	−7.9
Prostate	−6.0	(−8.0, −4.0)***	−4.4	−8.0
Bladder	−4.2	(−7.4, −1.1)**	−2.9	−5.6
Women				
Oesophagus	−7.3	(−14.9, 0.3)	−7.0	−9.7
Stomach	−1.0	(−3.1, 1.1)	−0.6	−1.3
Colorectum	−2.3	(−4.1, −0.5)*	−1.8	−3.1
Liver	−0.5	(−3.6, −2.6)	−0.1	−0.7
Pancreas	−0.5	(−3.9, 3.0)	−0.3	−0.6
Lung	−4.4	(−7.0, −1.7)**	−4.0	−5.8
Breast	−0.7	(−1.4, 0.0)*	−0.4	−1.0
Cervix+NOS	−3.7	(−6.5, −1.0)**	−3.4	−4.9
Corpus uteri	−1.9	(−5.3, −1.6)	−1.5	−2.5
Ovary	−8.7	(−13.0, −4.5)***	−8.5	−11.7
Bladder	−3.5	(−10.1, −3.2)	−2.9	−4.6

*p < 0.05, **p < 0.01, ***p < 0.001.

Supplementary Table IIIB. Sensitivity analysis for the deprivation gap in five-year survival.

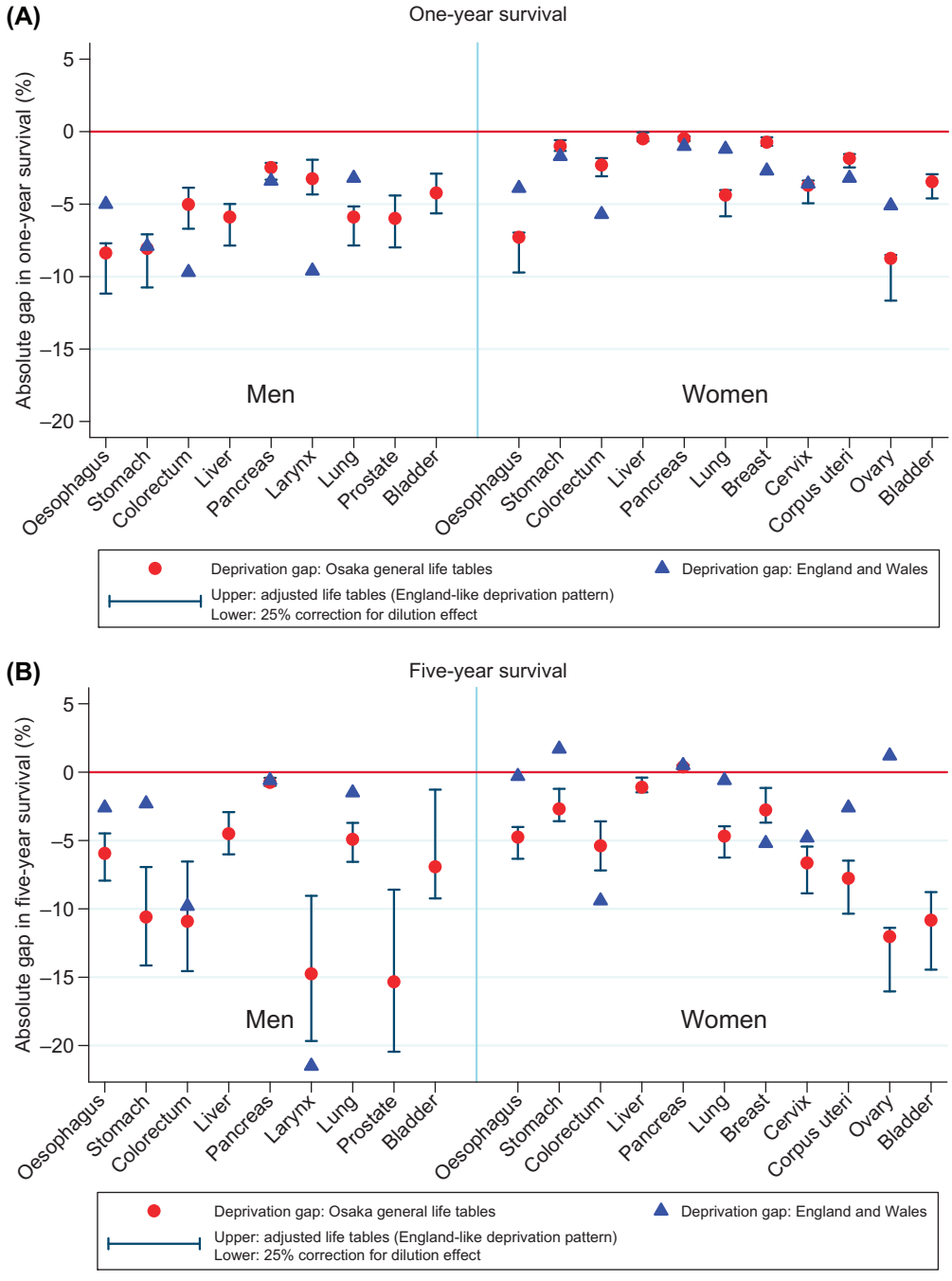
	(i) General Osaka life tables		(ii) Adjusted in England	(iii) 25% inflation
	%	95% CI	%	%
Men				
Esophagus	−5.9	(−8.9, −3.0)***	−4.5	−7.9
Stomach	−10.6	(−12.3, −8.9)***	−6.9	−14.1
Colorectum	−10.9	(−13.0, −8.8)***	−6.5	−14.5
Liver	−4.5	(−6.2, −2.8)***	−2.9	−6.0
Pancreas	−0.8	(−2.4, 0.9)	−0.4	−1.0
Larynx	−14.7	(−21.7, −7.8)***	−9.0	−19.7
Lung	−4.9	(−6.3, −3.6)***	−3.7	−6.6
Prostate	−15.3	(−19.3, −11.3)***	−8.6	−20.5
Bladder	−6.9	(−12.0, −1.8)**	−1.3	−9.2
Women				
Esophagus	−4.8	(−12.1, 2.6)	−4.0	−6.3
Stomach	−2.7	(−5.1, −0.3)*	−1.2	−3.6
Colorectum	−5.4	(−7.8, −3.0)***	−3.6	−7.2
Liver	−1.1	(−3.7, 1.5)	−0.4	−1.5
Pancreas	0.4	(−1.4, 2.1)	0.5	0.5
Lung	−4.7	(−7.0, −2.4)***	−4.0	−6.2
Breast	−2.8	(−4.3, −1.2)***	−1.2	−3.7
Cervix+NOS	−6.6	(−10.8, −2.5)**	−5.4	−8.9
Corpus uteri	−7.8	(−12.8, −2.8)**	−6.5	−10.4
Ovary	−12.0	(−16.9, −7.2)***	−11.4	−16.0
Bladder	−10.8	(−20.0, −1.6)*	−8.8	−14.4

*p < 0.05, **p < 0.01, ***p < 0.001.

Supplementary Table IIIC. Sensitivity analysis for the deprivation gap in conditional five-year survival of one-year survivors.

	(i) General Osaka life tables		(ii) Adjusted in England	(iii) 25% inflation
	%	95% CI	%	%
Men				
Oesophagus	−5.2	(−10.3, −0.1)*	−2.3	−6.9
Stomach	−6.8	(−8.7, −4.8)***	−1.4	−9.0
Colorectum	−9.1	(−11.3, −6.8)***	−3.6	−12.1
Liver	−4.6	(−7.2, −1.9)***	−1.8	−6.1
Pancreas	−2.1	(−8.9, −4.8)	−0.7	−2.7
Larynx	−10.3	(−17.8, −2.7)**	−3.9	−13.7
Lung	−6.7	(−9.3, −4.0)***	−3.9	−8.9
Prostate	−11.2	(−15.3, −7.1)***	−3.8	−15.0
Bladder	−3.6	(−8.9, −1.7)	3.1	−4.8
Women				
Oesophagus	−3.1	(−14.2, −8.0)	−1.7	−4.1
Stomach	−2.9	(−5.6, −0.1)*	−0.6	−3.8
Colorectum	−4.9	(−7.4, −2.3)***	−2.5	−6.5
Liver	−1.7	(−5.9, −2.4)	−0.5	−2.3
Pancreas	2.4	(−5.5, −10.4)	3.0	3.3
Lung	−5.8	(−9.7, −1.9)**	−4.4	−7.7
Breast	−1.8	(−3.3, −0.4)*	−0.2	−2.4
Cervix+NOS	−4.2	(−8.3, −0.1)*	−2.8	−5.6
Corpus uteri	−6.8	(−11.5, −2.1)**	−5.4	−9.0
Ovary	−10.2	(−16.1, −4.4)***	−9.4	−13.7
Bladder	−10.8	(−20.6, −1.0)*	−8.1	−14.4

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.



Supplementary Figure 1. (A) Sensitivity analysis of deprivation gap One-year survival. (B) Sensitivity analysis of deprivation gap Five-year survival.

Supplementary Appendix

Appendix 1. The Japanese census-based deprivation index

The score of areal deprivation index (ADI) used in this study is defined as the weighted sum of census-variables:

$ADIi = k \times (2.99 \times proportion\ of\ old\ couple\ households_i + 7.57 \times proportion\ of\ old\ single\ households_i + 17.4 \times proportion\ of\ single\text{-}mother\ households_i + 2.22 \times proportion\ of\ household\ living\ in\ rent\ houses_i + 4.03 \times proportion\ of\ sales\ and\ service\ workers_i + 6.05 \times proportion\ of\ agricultural\ workers_i + 5.38 \times proportion\ of\ blue\ caller\ workers_i + 18.3 \times unemployment\ rate_i)$,

where i is an area index (the area being here Cho-Aza). The constant of k was originally proposed as the one making the score as a synthetic estimate of the number of 'poverty' households in an area; k becomes 0.01575 based on the population census of 2000 by following the procedure proposed by Gordon (1995). It should be, however, noted that assigning any positive number produces the same order of areas in terms of their deprivation score. The coefficients of census variables in the above equation are slightly different from the previously computed coefficients by one of the authors of this paper (Nakaya, 2011, Nakaya et al., 2014) mainly due to corrections of occupation categories and missing data handling.

Gordon D. Census based deprivation indices: their weighting and validation. J Epidemiol Community Health. 1995;49 Suppl 2:S39–44.

Nakaya T. Evaluating socioeconomic inequalities in cancer mortality by using areal statistics in Japan: A note on the relation between the municipal cancer mortality and the areal deprivation index. Proceedings of the Institute of Statistical Mathematics. 2011;59(2):239–65.

Nakaya T, Honjo K, Hanibuchi T, Ikeda A, Iso H, Inoue M, et al. Associations of all-cause mortality with census-based neighbourhood deprivation and population density in Japan: A multilevel survival analysis. PLoS One. 2014. (in press).

Appendix 2. Estimation of "improvement in survival", "deprivation gap" and "change in the deprivation gap"

We applied two multivariate regression models using least square regression weighted by the variance of survival to determine the change in survival through the study period, the deprivation gap in survival and the change in the gap though the period. The first model includes the period at diagnosis and deprivation group as independent variables.

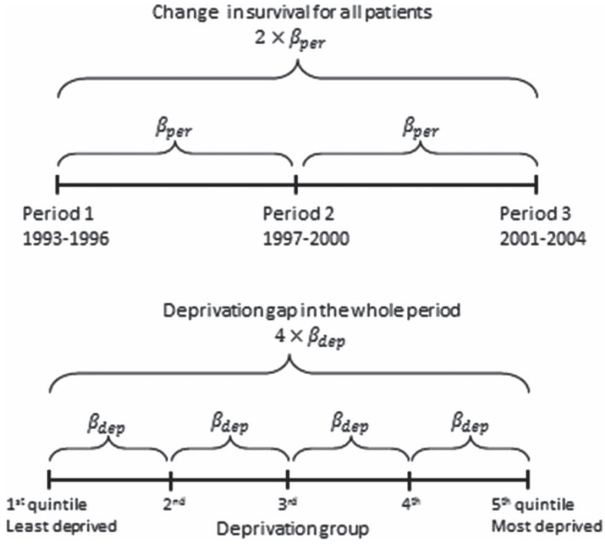
Model 1:

$$NS_{ij} = \beta_{per}\beta_i + \beta_{dep}d_j + e_{ij}$$

NS: net survival,

$pi = 1, 2, 3$ (period at diagnosis),

$dj = 1, 2, 3, 4, 5$ (deprivation group)



In this model, the coefficient of period at diagnosis (β_{per}) can be considered as the average change in survival between two periods of diagnosis in all deprivation groups. Table 3 shows the absolute change in survival through the three periods by multiplying the coefficient by two ($2 \times (\beta_{per})$, a positive value being an improvement. Similarly, the coefficient of deprivation group (β_{dep}) multiplied by four ($4 \times \beta_{dep}$) represents the absolute "deprivation gap" in survival.

We added interaction of period and deprivation in the second model as follows:

Model 2

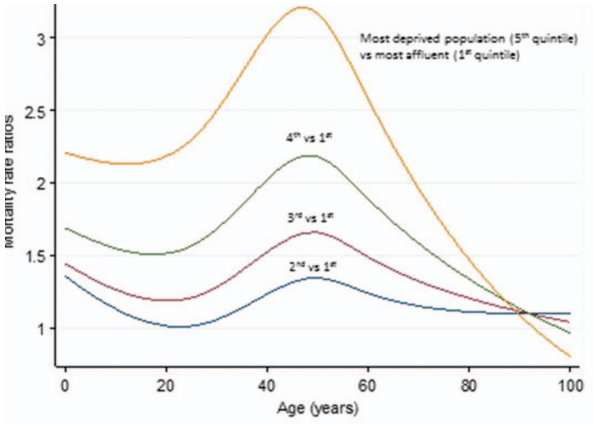
$$NS_{ij} = \beta_{per}p_i + \beta_{dep}d_j + \beta_{dep}p_id_j + e_{ij}$$

The coefficient of the interaction between period and deprivation (β_{perdep}) represents the change in the deprivation gap through the period. A positive coefficient means that the deprivation gap has reduced; negative coefficient reflects widening gap. To show the absolute change in the deprivation gap for the entire period and between the most deprived and most affluent groups, to the coefficient of interaction (β_{perdep}) was multiplied by eight (two for period and four for deprivation) (Table 3).

Appendix 3. Sensitivity analysis

First sensitivity analysis:

In order to account for the over-estimate of inequalities in cancer survival by using general life tables,



Mortality rate ratios observed in England, 2001, between more deprived population (quintile 2nd to 5th) and most affluent population (quintile 1st)

we modified the general Osaka life tables by applying the deprivation-related mortality rate ratios of the England deprivation-specific life tables in 2001 (see Figure below). We then re-estimated net survival using the modified life tables as a sensitivity analysis.

Second sensitivity analysis:

Japan ecological deprivation index was based on areas with larger population size than in England (average 6,000–7,000 in Osaka, 1,500 in England). Similar differential in population average was shown to under-estimate the deprivation gap in cancer survival by about 25% (dilution effect). In order to correct this dilution effect, we increased the deprivation gap estimates by 25%.