

Supplementary Table 1 Studies that compared the characteristics of patients who received palliative radiotherapy vs those that did not

Author Country Healthcare System Date	Data source Study design Study duration Sample size	Description of cancer	Description of Palliative Radiotherapy	Distance/ travel time measure	Characteristics controlled for	Summary of key results
Asli et al. ³⁶ Norway Publicly Funded 2018	Cancer Registry of Norway Retrospective cohort 1 st July 2009 – 31 st Dec 2011 n = 25,287	All primary sites (included all cancers)	PRT dose ≤ 39.5Gy during the last two years of life.	Shortest road travel distance to the radiotherapy centre the majority of patients in that municipality are treated in. Distance was split into nine distance categories.	Age, Sex, Cancer site, Survival time , Receipt of previous curative radiotherapy , Education, Household income, RT facility at diagnosing hospital	Patients living between 100km and 500km away had lower odds of receiving PRT in the last two years of life. 0 – 9.9km [REF] 10 – 49.9 [OR 0.93 95%CI 0.81–1.06], 50.0–99.9 [OR 0.98 95%CI 0.85–1.11] 100.0–199.9 [OR 0.83 95%CI 0.73–0.95], 200.0–299.9 [OR 0.75 95% CI 0.60–0.93], 300.0–399.9 [OR 0.71 95%CI 0.54–0.93] 400.0–499.9 [OR 0.61 95%CI 0.38–1.00] 500.0–799.9 [OR 0.72 95% CI 0.38–1.34], >800.0 [OR 0.81 95%CI 0.41–1.61] Included in the Meta-Analysis.
Danielson et al. ¹⁸ Canada Publicly Funded 2008	Alberta Cancer Registry Retrospective cohort 2000 – 2004 n = 1,906	Breast Cancer	Radiotherapy given with palliative intent. Sites of PRT: Bone, Brain, Locoregional and Eye.	Driving distance to the nearest cancer centre. . Categories (≤ 50 km & > 50km)	Distance was not included as a variable in the multivariate model.	Women living ≤ 50km from the nearest radiotherapy centre were more likely to receive PRT. ≤50 km 56.1% of patients received PRT, >50km 41.3% of patients received PRT (p<0.001) Included in the Meta-Analysis
Hayman et al. ³⁴ USA Mixed private & public funding 2007	Surveillance Epidemiology and End Results (SEER) Retrospective cohort 2010 – 2011 (year of diagnosis 1991-1996) n = 2,007	Metastatic non-small cell lung cancer	Defined as palliative radiotherapy if received radiotherapy within four months of diagnosis or claim within two years of diagnosis containing any code indicating RT.	Travel distance to the nearest radiotherapy center.	Age at diagnosis, Sex, Race, Median household income, Year of diagnosis, SEER registry, Comorbidity score, Hospitalized , Admission to a teaching hospital, Receipt of chemotherapy	Living further from the nearest radiotherapy centre was not associated with being less likely to receive PRT. OR> 1 Higher odds of receiving PRT 0 – 5 miles [REF] 6 – 10miles [OR 1.05 95%CI 0.90 ,1.23] 11-25 miles [OR 0.93 95%CI 0.79, 1.10] 26 –50 miles [OR1.03 95%CI 0.88, 1.22] ≥ 51 miles [OR 0.90 95%CI 0.76, 1.06] Included in the Meta-Analysis

Huang et al. ⁶ Canada Publicly funded 2014	British Columbia Cancer Registry Retrospective cohort Patients who died between 1 st April 2010 – and March 31 st 2011 n = 12,300	All cancer patients	Defined as palliative RT if a palliative intent code was provided by the treating oncologist or if the dose of treatment was <30Gy. They tested utilization of PRT in the last year of life	Travel time to the closest cancer centre from patients address. The address that they lived at when the last primary cancer was diagnosed (≤ 2 hours vs >2 hours)	Age, Sex, Primary cancer site, Survival times from diagnosis	Patients living further from the cancer centre had reduced odds of receiving PRT in their last year of life compared to those living closer. OR > 1 Higher odds of receiving PRT >2 hour [REF] ≤ 2 hours [OR 1.44 95%CI 1.28 -1.62]
Johnston et al. ²⁸ Canada Publicly funded 2001	Nova Scotia Cancer Registry Retrospective cohort April 1992 – Dec 1998 (Died between 1994- 1998) n = 9,978	All adults > 20 who died of cancer	RT considered palliative if there was palliative intent code provided by radiation oncologist of if ≤ 10 fractions were administered in the last nine months of life.	Distance from the postcode at death to the provincial cancer centre. “As the crow flies” distance to the cancer centre. (<25 miles, 25- 100, 100-200 & >200miles)	Age at death, Sex, Community median household income (MHI), Year of death, Microscopic confirmation, Cause of death, Time from diagnosis to death, Receipt of RT in year before terminal period	Living closer was associated with higher odds of having a radiotherapy consultation and receiving PRT after having the initial consultation OR> 1 lower likelihood of receiving PRT given already having a RT consultation. <25km [OR 0.84 95%CI 0.68, 1.04] 25 – 100 [OR 0.95 95%CI 0.46, 1.19] 100-200 [OR 0.70 95%CI 0.56, 0.88] >200km [REF]
Khor et al. ³⁵ Australia Publicly Funded 2013	HOSPRO database People receiving PRT between 1998 – 2010 n = 48,200	Range of primary cancer types	Palliative intent. Retreatment.	Distance from the residential postcode to the treatment centre <100km & ≥100km	Chi-square test was used to evaluate if the retreatment proportion for patients living <100 km and > 100 km from the treatment facility was the same	Patients who travelled > 100km had a lower PRT retreatment rate than those closer. Retreatment rates decrease with increasing distance from treatment centre up to 100 km, beyond this threshold patients can access subsidised travel and accommodation.
Kong et al. ²⁹ Canada Publicly funded 2012 Linked to: Kong et al (2015)	Ontario Cancer Registry Retrospective cohort 1984- 2007 n =494,709	Brain Metastases with a range of primary cancers	Whole brain radiotherapy in the last two years of life	Linear travel distance between residence at time of diagnosis and cancer centre (<10km, 10-50km and >50km)	Sex, Age at death, Socioeconomic status, Primary cancer site, Time between diagnosis and death, Availability of radiotherapy service, Waiting time, Year of death	Patients who lived closer to a radiotherapy centre were more likely to receive whole brain radiation therapy for brain metastases than those living further away. <10km [OR 1.06 95%CI 1.02,1.09] 10 - 50 [REF] >50 km [OR 0.93 95%CI 0.90, 0.97]

<p>Kong et al ³⁰</p> <p>Canada Publicly funded 2015</p>	<p>Ontario Cancer Registry Retrospective cohort 1998 -2007</p> <p>n =231,397</p>	<p>Brain metastases with a range of primary cancers</p>	<p>Whole brain radiation for brain metastases in the last two years of life.</p>	<p>Travel distance from home to the nearest radiotherapy centre (<10km, 10-50km and >50km)</p>	<p>Sex, Age at death, Primary site, Time from diagnosis to death, Socioeconomic status, Availability of radiotherapy at diagnosing hospital, Median prevailing waiting time</p>	<p>Those who lived closer to a radiotherapy centre had higher odds of receiving whole brain PRT. OR> 1 higher odds of receiving PRT</p> <p><10km [OR 1.06 95%CI 1.01, 1.12] 10 - 50 [REF] >50 km [OR 0.95 95%CI 0.91, 0.999] Included in the Meta-Analysis</p>
<p>Lavergne et al ³¹</p> <p>Canada Publicly Funded 2011</p>	<p>Nova Scotia Cancer Registry Retrospective cohort Died between 2000 – 2005</p> <p>n =13,494</p>	<p>Range of primary cancers</p>	<p>Palliative consultation and treatment rates in the last nine months of life.</p>	<p>Road travel time from the resident's postcode at death to the closest treatment centre.</p>	<p>Sex, Age, Cancer Site, Survival time, Medical oncology consultation, Previous radiotherapy, Place of death, Place of residence, Deprivation quintiles, Urban/ rural location</p>	<p>For every 1 hour from the treatment centre the odds of receiving PRT in the last nine months of life declined. OR> 1 higher odds of receiving PRT</p> <p>Every 1 hour [OR 0.84 95%CI 0.79,0.88]</p>
<p>Mackillop et al ³²</p> <p>Canada Publicly Funded 2016</p>	<p>Ontario Cancer Registry Retrospective Cohort Died between 2006 – 2010</p> <p>n = 127,547</p>	<p>PRT for Metastases Range of primary cancers</p>	<p>Courses of PRT were identified from the registry by intent. Where intent was missing it was imputed by fraction size total dose and total number of fractions. The rate of was measured as PRT in the last two years of life.</p>	<p>Travel distance from home to the nearest radiotherapy centre (<10km, 10-50km, >50km)</p>	<p>Sex, Age at death, Time from diagnosis to death, Primary cancer site, Socioeconomic status, Availability of radiotherapy at the diagnosing hospital</p>	<p>Living further from the radiotherapy centre was associated with reduced odds of receiving PRT in the last two years of life. OR > 1 Higher odds of receiving PRT.</p> <p>< 10km [REF] 10– 50km [OR 0.91 95%CI 0.88, 0.94] > 50KM [OR 0.82 95%CI 0.79, 0.85]</p> <p>Distance had a stronger effect for those patients who were diagnosed at a hospital with no RT. Included in the Meta-Analysis</p>
<p>Sutton et al. ³³</p> <p>Canada Publicly funded 2010</p>	<p>Ontario Cancer Registry Retrospective Cohort Died between 1984 – 2004</p>	<p>Bone Metastasis [Range of primary cancers]</p>	<p>PRT identified by the intent of treatment and the body region irradiated.</p>	<p>Travel distance between the patient's residence at the time of diagnosis and the cancer centre most</p>	<p>Sex, Age at death, Median household income, Primary cancer site, Time between diagnosis and death,</p>	<p>Living further from the RT centre was associated with reduced odds of receiving PRT in the last two years of life. OR> 1 Higher odds of receiving PRT.</p>

	n = 434,241		The proportion of patients who received at least one course of PRT for bone metastases within the last two years of life.	frequently visited by patients in the same census subdivision. (<10km, 10-50km, >50km)	Availability of RT services at the diagnosing hospital, Prevailing waiting time, Year of death	< 10km [REF] 10– 50km [OR 0.90 95%CI 0.88, 0.93] >50km [OR 0.81 95%CI 0.80,0.84] Included in the Meta-Analysis
Wu et al ²⁷ Canada Publicly funded 2010	Tom Baker Cancer Centre Retrospective Cohort First course of PRT 2003-2005 n = 887	PRT for bones metastases	Study focused on repeated access for PRT provided for bone metastases.	Travel distance to the cancer centre from patient's last known residential postcode (≤ 50km vs >50 km)	Study analysed repeat PRT visits using a multivariate poisson model Service provider, Age, Primary cancer, Disease free interval, Symptom free interval, Bone complication, Fractionation	Travel distance over 50km was associated with a reduced likelihood of repeat PRT visits compared to those living < 50km away. ≤50km vs >50 km [Rate Ratio 1.29 95% CI .04, 1.59]