

Swedish National
Breast Cancer Study

Karma

Karma Core variables

The Karma core variables are central variables picked from the entire Karma data collection and refer to the date at baseline, i.e. first assessment in Karma, if not stated otherwise. Karma holds the following core variables.

Demographics

StudieID	ID of person in study
study_entrydate	Entry date of woman in study, the first date of survey or blood drawing.
age	Age at assessment. First date of survey interview or blood drawing.
yearofbirth	Year of birth.
started_time	Survey started time.
finished_time	Survey finish time for complete response.
bmi	Body Mass Index
length	Length in cm

weight	Weight in kg
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(Survey based variable at baseline in Karma)

Medication

painkillers	Use of OTC painkillers in last year. See question sb9 in questionnaire, i.e. any of paracetamol, Ibuprofen, Diklofenak, acetylsalicylic acid.
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(Survey based variable at baseline in Karma)

Cancer and benign breast disease

benign_breastdisorder	Benign breast disorder
breastcancer	Breast cancer
othercancer	Other cancer than breast

(Survey based variable at baseline in Karma)

Cancer in family

breastcancer_in_family_nbr	Number of breast cancer cases in family (1 st degree relatives, including children)
breastcancer_mother	Mother has breast cancer
breastcancer_sisters	Sister(s) has breast cancer, nbr

breastcancer_daughter	Daughter has breast cancer, yes/no
breastcancer_mother_age	Age at breast cancer onset for mother
breastcancer_mother_sister1_age	Age at breast cancer onset for (oldest) sister
breastcancer_mother_sister2_age	Age at breast cancer onset for (second oldest) sister
breastcancer_in_relative_nbr	Number of breast cancer cases in relatives (2 nd degree relatives)
ovariancancer_in_family	Ovarian cancer in family (1 st degree relatives, including children)

(Survey based variables at baseline in Karma)

BRCA mutation

brca_mutation	Gene test for BRCA mutation detection.
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(Survey based variable at baseline in Karma)

Education

education_level	Education level, see question bg5 in questionnaire for interpretation
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Ancestry

european_ancestry_iso	European ancestry, i.e. study participant born in Europe and parents born in Europe
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born_country	Birth country of study participant
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immigration_date	Date of immigration (first?)
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emigration_date	Date of emigration (last?)
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(All are survey based variables at baseline in Karma)

Reproductive health

menarche_age	Age at menarche
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cycles_irregular	Ever had irregular menstrual cycles
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contraception_ever	Ever used oral contraceptives
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pregnant_times	Number of pregnancies
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birth_times	Number of births
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age_at_firstchild	Age at first child birth
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wom_pregn_tried1yr	Infertility status (tried to get pregnant for one year unsuccessfully)
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menopause_status	1 is pre, 2 is peri, 3 is postmenopausal
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postmenopausal	Menopause due to no period in last year.
postmenopausal_before_bc	Menopausal at least 1 year before BC. (a missing menopause age for a woman with BC over age 50 is set to 1)
menopause_age	Age at menopause
hrt_ever	Ever used hormonal treatment
hrt_status	2 is current user, 1 is previous user, 0 is never user. Variable applies to systemic HRT use only
hrt_status_at_bc	HRT status at time of BC
wom_pregn_tried1yr	Woman tried to get pregnant for at least one year without success.

(Survey based variables at baseline in Karma)

Living habits

alcohol_gram_week	Grams of alcohol per week (based on last year consumption).
smoking_packyears	Number of pack years (1.0 means 20 cigarettes per day for 1 year).
smo_present	Deprecated.
smoking_status	2 is current user, 1 is previous user, 0 is never user.

(Survey based variables at baseline in Karma)

Physical activity

pa_daily_total_controlled MET (metabolic equivalent of task)
of daily physical activity as estimated
during last month since interview

(Survey based variables at baseline in Karma)

Quality of Life

ql Overall quality of life score (QLQ-C30).

(Survey based variable at baseline in Karma)

Breast cancer and breast disease

bc_1stdiagdate Breast cancer onset date

bc_1stdiagside Breast cancer laterality
(1=right)

bc_1stdiagage Age at breast cancer onset

bc_2nddiagdate Recurrence, second date

bc_2nddiagside Recurrence, second laterality

bc_2nddiagage	Age at 2 nd breast cancer onset
icd10_"code"	ICD10 breast cancer codes
bc_invasive_1stdiagdate	Invasive breast cancer onset
bc_case	Had a breast cancer
bc_prevalent	Had a breast cancer prior to study entry (blood drawing date vs. BC date) If blood date is missing, survey date is used.
bc_invasive	Breast cancer is invasive
bc_incident	Had a breast cancer since Karma study started
bc_incident_1stcancer	Had 1st breast cancer after joined Karma study (blood drawing date vs. BC date) If blood date is missing, survey date is used.
bc_case_1yr	Had a breast cancer in last year
bc_case_Xyr	Had a breast cancer in last X years
bc_prevalent	Had a breast cancer before entered Karma study
bc_case_karmastarted	Had a breast cancer since the start of the Karma study
bc_invasive_since2007	Invasive breast cancer since INCA started in 2007
othercancer_1stdiagdate	Onset date for non-BC cancer
othercancer_1stdiagage	Onset age for non-BC cancer
othercancer_malign_1stdiagdate	Onset date for non-BC invasive malign cancer

othercancer_malign_1stdiagage	Onset age for non-BC invasive malign cancer
othercancer_case	Had another cancer than breast cancer
othercancer_prevalent	Prevalent other cancer
othercancer_malign	At least one other cancer is invasively malign
cancer_nbr_swecan	Number of cancers as registered in Swedish cancer register (2 year lag)
cancer_malign_nbr_swecan	Number of invasive malign cancers as registered in Swedish cancer register (2 year lag)
nonmelanom_skincancer_malign	Non-melanoma skin cancer, malignant
nonmelanom_skincancer_case	Non-melanoma skin cancer, malignant or benign
oc_case	Ovarian cancer case

(Above variables are current cancer status based on Swedish cancer register, the RCC STHLM breast cancer register, and the INCA breast cancer register)

Tumor characteristics

t	Tumor size
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n	Lymph node metastases
m	Distant metastases
er	ER receptor status
her2	HER2 status

(Information from Swedish Cancer Register for worst tumor in case woman had more occurrences)

Cause of death

deathcause	Cause of death (ICD code)
deathdate	Date of death
deathcause_bc	Death caused by breast cancer
deathcause_any	Death not caused by any reason

Karma unit

ipt_karma_unit	Unit performing the blood sampling
ipt_bloodsampling_date	Date of blood sampling
ipt_bloodpressure_diastolic	Diastolic blood pressure at assessment
ipt_bloodpressure_systolic	Systolic blood pressure at assessment

(Variables are at the time of baseline and was registered by nurses)

Biobank

bbk_alquot_saldo Current number of aliquots remaining in biobank.

Mammogram measures

volpara_mammography_date Mammography date for Volpara measurement closest in time to baseline for controls and closest prior to BC diagnosis date for cases.

volpara_viewposition Measurement performed on CC or MLO view.

VolumetricBreastDensity Volumetric breast density (%), mean of right/left breast, MLO-view

BreastVolumeCm3 Total breast volume, mean of right/left breast, MLO-view

stratus_mammography_date Mammography date for Stratus measurement closest in time to baseline for controls and closest in time prior to BC diagnosis date for cases.

stratus_viewposition Measurement performed on CC or MLO view.

cbirads Categorization of stratus_pd into four BI-RADS similar categories

stratus_pd	Mammographic density measurement based on Stratus area based method. Mean value of left/right mammogram, MLO view.
stratus_densearea_cm2	Measured dense area of breast (cm2). Mean value of left/right mammogram, MLO view.
stratus_breastarea_cm2	Measured breast area of breast (cm2). Mean value of left/right mammogram, MLO view.
cbirads_gt3mnt	Same as above, but with mammogram taken at least 90 days prior to breast cancer diagnosis date.
stratus_pd_gt3mnt	
stratus_densearea_cm2_gt3mnt	
stratus_breastarea_cm2_gt3mnt	

Breast cancer risk

age_riskassessed	Age of women when risk is assessed. Survey interview date for controls and age at breast cancer for cases.
risk_breastcancer_own_10yr	10-year risk for developing breast cancer.
risk_breastcancer_own_lifetime	Lifetime risk (remaining lifetime from current age) for developing breast cancer.

(Tyrer-Cuzick risk model assessment. Variables are at the time of baseline and based on survey variables)

Genotype data

Published SNPs related to breast density

rs10995190, rs10509168 (ZNF365 gene)

rs10483813 (Rad5 1L1 gene)

rs3817198 (LSP1 gene)

rs1520220 (IGF1 gene)

rs2946834 (IGF1 gene)

Cause of death

dodsdatn Date of death

ulorsak Main cause of death, ICD-10.

(Variables on current status based on the Swedish case of death register)

Mammogram occasions

rounds_image_prestudy Rounds of mammograms available for woman prior to date of study entry

rounds_image_prestudy_raw Rounds of raw mammograms available for woman prior to date of study entry

rounds_image_instudy Rounds of mammograms available for woman in study, i.e. at study entry or after study entry

rounds_image_instudy_raw	Rounds of raw mammograms available for woman in study, i.e. at study entry or after study entry
rounds_image_prediag	Rounds of mammograms available for woman prior to (and up to same date of) her date of 1 st BC diagnosis date
rounds_image_prediag_raw	Rounds of raw mammograms available for woman prior to (and up to same date of) her date of 1 st BC diagnosis date
rounds_image_postbc	Rounds of mammograms available for woman after her date of 1 st BC diagnosis date
rounds_image_postbc_raw	Rounds of raw mammograms available for woman after her date of 1 st BC diagnosis date

(Variables based on KARMA mammogram repository)

Available data sources

source_image	Image data available
source_image_analog	Analog image data available
source_image_digital	Digital image data available
source_image_prediag	Image data available prior to (and up to same day of) BC diagnosis
source_image_postdiag	Image data available after BC diagnosis

source_genotype

Genotype data available

source_genotype_cogs

Genotype data available from
COGS

source_genotype_onco

Genotype data available from
Oncoarray

source_survey

Survey data available