IMPACT OF LIFETIME BODY MASS INDEX TRAJECTORIES ON THE INCIDENCE AND PERSISTENCE OF ADULT ASTHMA

Supplementary Material

Data Collection and Ethical Review Committee Approvals

Briefly, all school children in Tasmania born in 1961 (n=8583) were recruited in 1968 (aged seven years). Follow-ups of this cohort occurred in 1974, 1979-1981, 1992, 2002-2006, 2010, and 2012-2016. During the 1968 survey, parents completed questionnaires on their children's respiratory outcomes, while these participants subsequently completed self-administered questionnaires. Various health parameters were assessed at follow-ups, including asthma, lung function (spirometry), anthropometry, blood samples, environmental exposures, home environment, and family histories of smoking and respiratory diseases. This study was approved by the Tasmanian Joint Human Ethics Review Committee and informed consent was obtained from all the participants at each follow-up.

Baseline study (1968) and follow-ups in 1974 and 1979 were approved by the Tasmanian Minister of Health and the human ethics review committee at the University of Tasmania. The human ethics review committees approved 2002, 2010, and 2012 follow-ups at the University of Melbourne (approval number 040375), Tasmania (040375.1) and New South Wales (08094), the Alfred Hospital (1118/04), and Royal Brisbane and Women's Hospital health service district (2006/037) and conducted following the amended Declaration of Helsinki.

Asthma

Since some adults may forget their childhood asthma, hence asthma status at 43 years was categorised from the baseline 7-year asthma status reported by parents to avoid misclassification of past-asthma status. This was particularly useful for reported never-asthma and remitted-asthma by 43 years. This also helped us to correctly identify the real incident cases among those who did not have asthma from childhood to 43 years. Furthermore, we excluded all those cases who reported inconsistent status of asthma at 43 and 53 years e.g. those who reported remitted (history of past) asthma at 43 years but then reported never (no life time) asthma at 53 years.

Information collected via the following questions was used to define participants asthma status

Questions used at 43 years	**Questions used at 53 years**
1. Have you, at any time in your life, suffered from attacks of asthma or wheezy breathing? 2. How long ago did you have the last attack? 3. Have you taken any medicine (including inhalers) or tablets for asthma in the last three months? 4. Have you had wheezing or whistling in your chest in the last 12 months? 5. Have you, at any time in the last 12 months, woken to a feeling of tightness in your chest? 6. Have you, at any time in the last 12 months, been woken at night by an attack of shortness of breath?	1. Have you, at any time in your life, suffered from attacks of asthma or wheezy breathing? 2. Have you had an attack of asthma or wheezy breathing in the last 12 months? 3. Have you taken any medicines, including inhalers or tablets for asthma or wheezy breathing, in the last 12 months? 4. Have you had wheezing or whistling in your chest in the last 12 months? 5. Have you had an attack of shortness of breath at rest at any time in the last 12 months?

Figure S1: TAHS follow-ups and the data collected

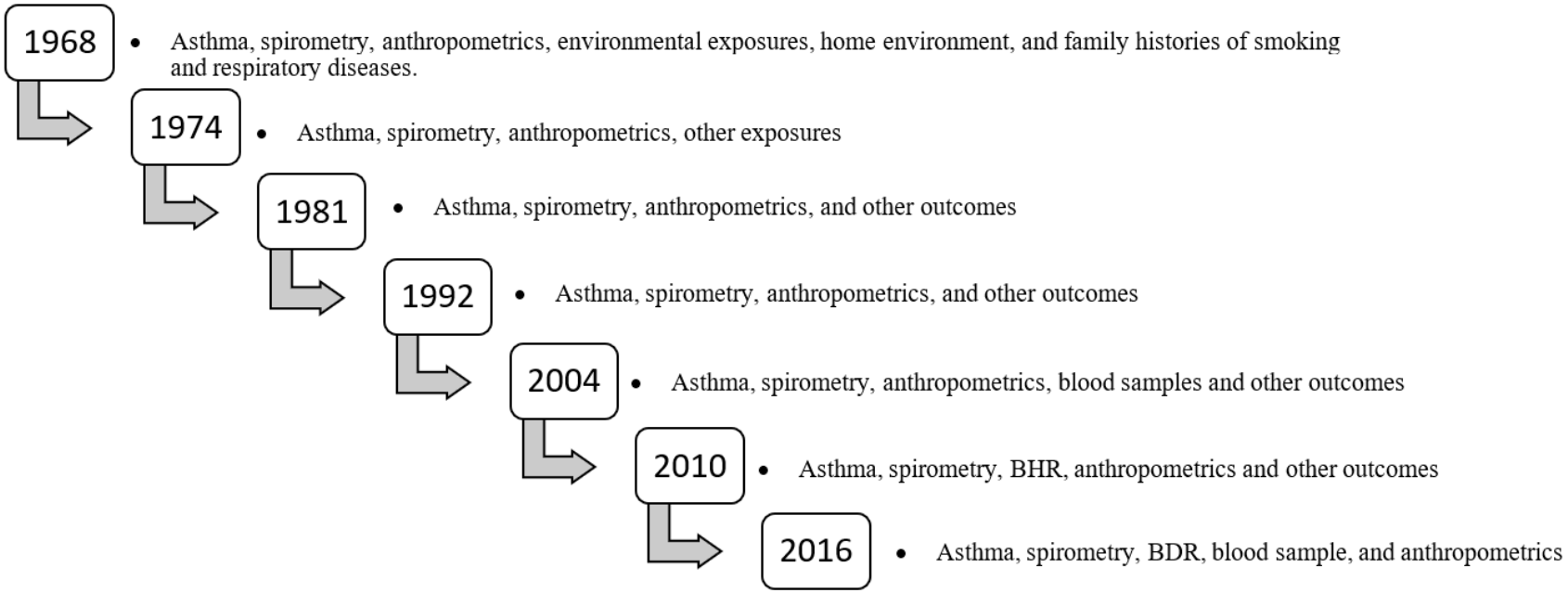
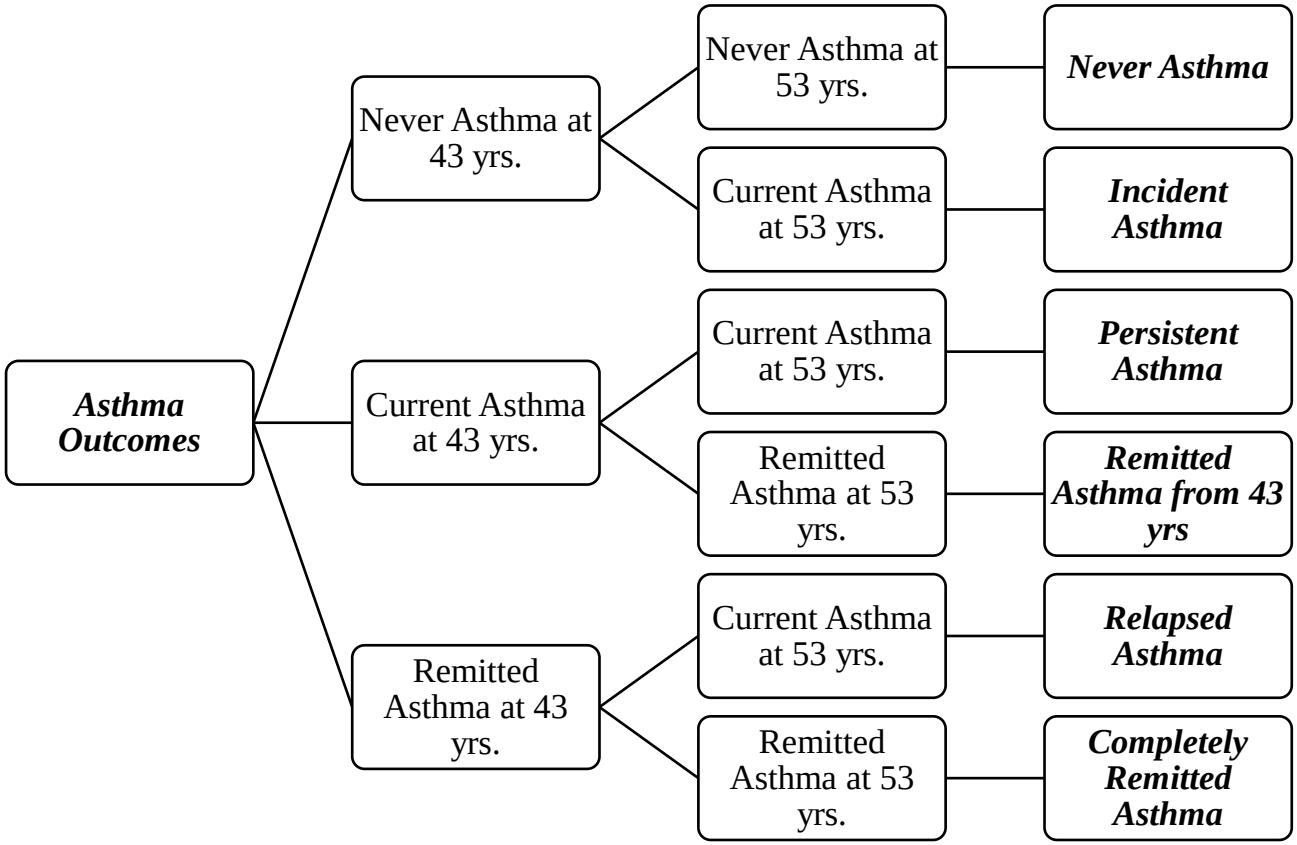


Figure S2: Description of the change in asthma status from 43 to 53 years



Statistical Analysis

The distributions of the early life risk factors and the respiratory health outcomes at 43 and 53 years of the BMI trajectories were assessed using the chi-square test for categorical variables and ANOVA for continuous variables as long as assumptions were fulfilled. In addition, we conducted logistic regression to evaluate the association with BHR and linear regression with BDR at 53 years.

The minimum set of confounders included: sex, birth weight, breastfeeding, mother's age, parental history of smoking, mother's education, family history of asthma, respiratory tract infections, physical activity, allergies, socioeconomic status, number of siblings, and diet. We adjusted the association between BMI trajectories and adult asthma for the minimum set of variables, except birthweight, breastfeeding, physical activity, diet, and maternal education. However, we used 'feeding in the first three months' as a proxy for breastfeeding, small for gestational age as a proxy for birth weight and gestational age, maternal employment as a proxy for maternal education, and adult education and employment as a proxy for adulthood SES. In addition, we investigated sex, smoking, and obesity at 53 years as potential effect modifiers using likelihood ratio tests. Due to small observations for small for gestational age (SGA), we decided to adjust for this variable in a subgroup analysis. Results are presented as odds ratios with 95% CI and a p-value =0.05 considered as statistically significant.

Description of Other Variables

The information about these variables was collected contemporaneously by questionnaires. Childhood variables were defined using the information provided by parents in the 1968 survey when the children were seven years of age. Adulthood variables were collected from the 43 years follow-up.

Childhood Variables

Childhood asthma was measured as yes or no by asking questions; has he/she at any time in his/her life suffered from asthma attacks or wheezy breathing? Childhood respiratory infections were measure by considering the questions for bronchitis, pneumonia, chest illness, and tonsillitis. Childhood bronchitis was regarded as a binary variable yes/no using question; has he/she at any time in life suffered from the attack of bronchitis or attacks of cough with sputum in the chest? Childhood pneumonia is measured as yes or no with a question; have you ever been told by a doctor that he/she had pneumonia or pleurisy? Childhood chest illness was considered as not at all, 1-7 days, and more than 7 with a question; for how much time in the past twelve months has the child been confined to the house because of the chest illness? Tonsillectomy measured as yes or no by asking; has he/she had the tonsils removed? Childhood food

allergy was measured as yes or no using question; have you been told by a doctor that he/she is allergic to any food or medicine? Childhood socioeconomic status was classified by the father's occupation and divided into five categories using the Australian Standard Classification of Occupation [1]. Mother's age was considered as a continuous variable. Parental history of smoking was defined by the parents' responses to the question; do you smoke every day or six days out of seven?

Similarly, parental asthma was defined by the parent's response to the question; have you ever had asthma or attack of wheezing like asthma? Data on birth weight and gestational age were available for a subset, therefore to adjust for birthweight and gestational age, we developed a "small for gestational age" variable [2] in a subgroup (see Table S 1 & S 3). Physical activity, diet, and parental education were considered as potential confounders but were not included due to insufficient information.

Adulthood Variables

We did not adjust for all the adulthood factors due to high collinearity with childhood risk factors. However, adulthood food allergy was measured as a binary variable by asking, have you ever been to allergic to any of the food? Employment (are you currently employed or self-employed?) and education achievement (what is the highest educational or vocational qualification that you have completed) were used as proxy variables for adulthood socioeconomic status. Employment was considered a binary variable (yes/no), and education was classified as less than to 12th grade or more than and equal to 12 grades based on sparse data in different categories. Adulthood smoking was measured as yes/no by asking; In your lifetime, have you smoked at least 100 cigarettes or equal amounts of cigars, pipes, or any other tobacco product? BMI at 43 years was categorised in to underweight (BMI<18.5), normal ($18.5 \leq BMI \leq 24.9$), overweight ($25 \leq BMI \leq 29.9$), and obese ($BMI \geq 30 kg/m^2$).

Description of Using Group-Based Trajectory Model and Model Building

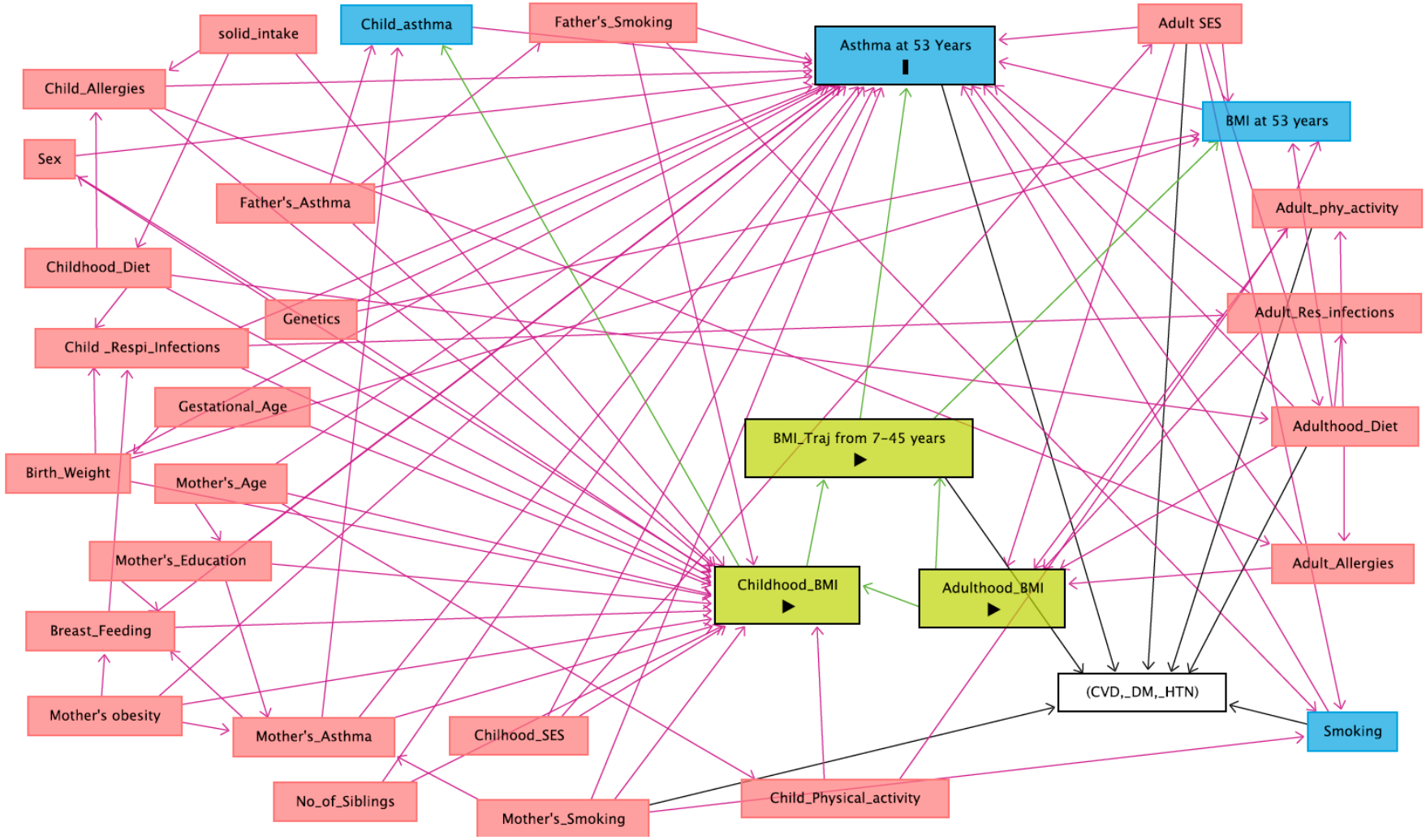
Different trajectory modelling techniques have been used in the past depending on the research question and data type of various health outcomes in longitudinal research studies. Trajectory modelling techniques include latent class modelling approaches, i.e., growth mixture modelling (GMM), latent class analysis (LCA), latent transition analysis (LTA), and group-based trajectory modelling (GBTM). Three of these techniques are suitable for longitudinal data: GMM, GBTM, and LTA, while LCA is suitable for cross-sectional data [3]. The group-based trajectory model is an extension of finite mixture modelling [4]. We use GBTM because it is a simpler specification of GMM. One of the significant advantages of using GBTM is it handles missing data and allowing for correlated residuals. Unlike GMM, GBTM is a semi-

parametric model, estimates fewer parameters and can run faster with fewer errors. In addition, the model is less complex; thus, results may be easier to interpret [3].

We used age as an independent variable to define time in this trajectory analysis. We fitted models by increasing the number of trajectories. Initially, for a specified number of trajectories, different models with different polynomial functions were compared. We then selected the model with the highest order polynomial for which all parameters defining the polynomial were significantly different from zero. The most appropriate model with "n" distinct trajectories was then compared with the most suitable model with "n+1" distinct trajectories. Bayesian information criteria (BIC) was used to assess model fit. We selected the final model based on model fit, shape, and number of trajectories. The assignment of each participant to a group was based on the highest posterior probability for that individual.

We selected a five-trajectory model because of its appropriateness in terms of BIC (lowest), the average posterior probability for the trajectories was appropriate (>0·81), and the shape of the trajectories was comparable (Table S13). However, in one trajectory the number of participants were less than 5%, but we compromised for the lowest BIC. We assigned unique names based on the appearance of each trajectory in the model. For the association with the asthma we conducted a weighted regression analysis for the posterior probabilities and did not see any differences in the weighted and un-weighted results (Tables S14-S16).

Figure S3: Diagram of possible causal associations



Legend

Exposure
Outcome
Ancestor of exposure
Ancestor of outcome
Causal path
Biasing path

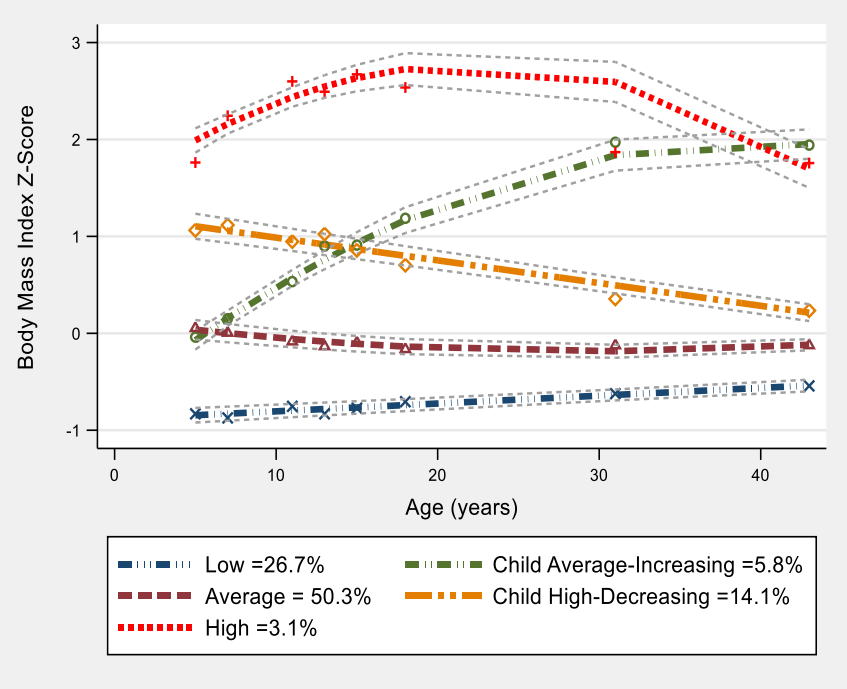


Figure S4: BMI trajectories graph with CIs:

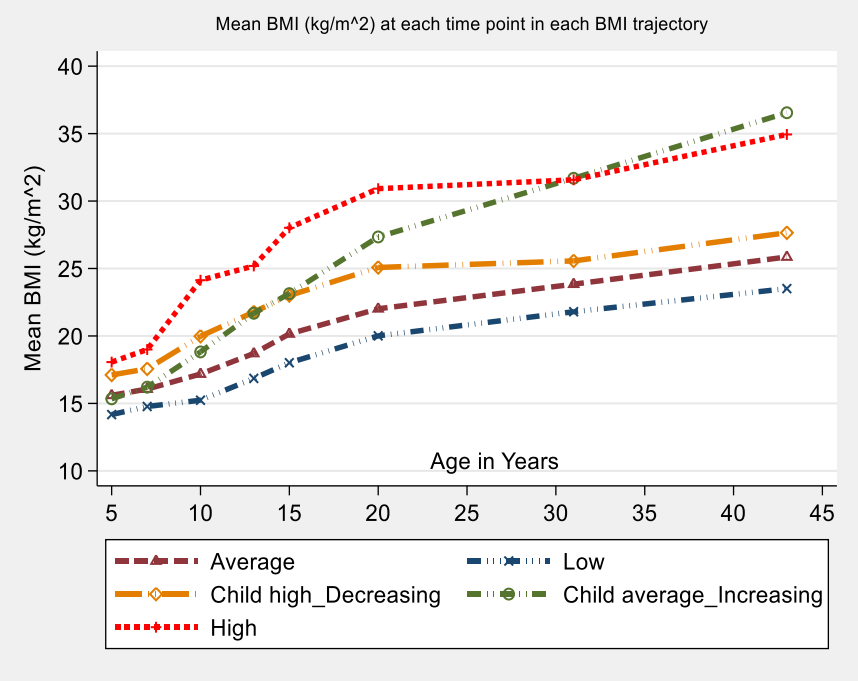


Figure S5: Mean BMI at each time point for each trajectory (These are not the trajectories developed by using raw BMI values, but a simple line plot for mean BMI at each time points for the same trajectories)

Table S1: Associations between BMI trajectories from 5 to 43 years and Incident Asthma from 43 to 53 years of age among those who did not have asthma at age 43.

BMI Trajectories N=1461	Incident Asthma % (n)	Crude OR (95%CI) (n= 1461)	Adjusted† OR (95%CI) (n=1298)
Average (n=736)	5·6 (41)	-	-
Low (n=418)	6·0 (25)	1·08 (0·65, 1·80)	1·21 (0·68, 2·18)
Child High-Decreasing (n=208)	4·8 (10)	0·86 (0·42, 1·74)	0·81 (0·36, 1·85)
Child Average-Increasing (n=60)	13·3 (8)	**2·61 (1·16, 5·85) ***	**2·64 (1·05, 6·63) ***
High (n=39)	17·9 (7)	**3·71 (1·54, 8·91) ****	**4·41 (1·71, 11·37) ****

† Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.
* P-value=<0.05
** P-value=<0.01

Table S2: Adjusted associations between BMI trajectories from 5 to 43 years and incident asthma from 43 to 53 years of age among those who did not have asthma at age 43. (Additional adjustment for Small for gestational age in a subset)

BMI Trajectories N=652	Asthma % (n)	OR† (95%CI) (N= 611)	OR‡ (95%CI) (N= 611)
Average (n=329)	4.0 (13)	-	-
Low (n=189)	4.4 (8)	1·11 (0·43, 2·83)	1·10 (0·43, 2·82)
Child High-Decreasing (n=89)	5.6 (5)	1·44 (0·47, 4·34)	1·47 (0·48, 4·45)
Child Average-Increasing (n=24)	12.5 (3)	2·36 (0·57, 9·73)	2·41 (0·58, 9·92)
High (n=21)	19.1 (4)	**6·18 (1·56, 24·50) ****	**6·09 (1·53, 24·26) ****

†Sex, Type of Feeding in The First Three Month, No of Siblings, Chest Illness, Tonsillectomy, Pneumonia, Childhood Food Allergy, Bronchitis, Social Class During Childhood, Mother's Employment, Mother's Age, Mother's Asthma, Mother's Smoking, Father's Asthma, Father's Smoking, Adulthood Education, Adulthood Food Allergy, Smoking and Current Employment
‡ Above confounders and SGA
* P-value=<0.05
** P-value=<0.01

Table S3: Associations between BMI trajectories from 5 to 43 years and Persistent Asthma from 43 to 53 years of age among those who have current asthma at age 43.

BMI Trajectories N=546	Persistent Asthma % (n)	Crude OR (95%CI) (n=546)	Adjusted† OR (95%CI) (n=450)
Average (n=259)	54·8 (142)	-	-
Low (n=153)	47·1 (72)	0·73 (0·49, 1·09)	0·67 (0·41, 1·07)
Child High-Decreasing (n=79)	50·6 (40)	0·85 (0·51, 1·39)	0·75 (0·41, 1·34)
Child Average-Increasing (n=36)	58·3 (21)	1·15 (0·57, 2·34)	1·04 (0·43, 2·47)
High (n=19)	52·6 (10)	0·92 (0·36, 2·33)	0·82 (0·24, 2·80)

†Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.
* P-value=<0.05

Table S4: Adjusted associations between BMI trajectories from 5 to 43 years and Persistent asthma from 43 to 53 years of age among those who have asthma at age 43. (Additional adjustment for Small for gestational age in a subset)

BMI Trajectories N=267	Asthma % (n)	OR† (95%CI) (N= 235)	OR‡ (95%CI) (N= 235)
Average (n=130)	53.1 (69)	-	-
Low (n=80)	46.3 (37)	0·69 (0·34, 1·38)	0·65 (0·32, 1·31)
Child High-Decreasing (n=33)	39.4 (13)	0·56 (0·21, 1·46)	0·54 (0·21, 1·39)
Child Average-Increasing (n=20)	60.0 (12)	1·04 (0·31, 3·55)	1·02(0·29, 3·55)
High (n=4)	50.0 (2)	0·52 (0·04, 7·25)	0·37(0·02 5·856)

†Sex, SGA, Type of Feeding in The First Three Month, No of Siblings, Chest Illness, Tonsillectomy, Pneumonia, Childhood Food Allergy, Bronchitis, Social Class During Childhood, Mother's Employment, Mother's Age, Mother's Asthma, Mother's Smoking, Father's Asthma, Father's Smoking, Adulthood Education, Adulthood Food Allergy, Smoking and Current Employment
‡ Above confounders and SGA
* P-value=<0.05

Table S5: Associations between BMI trajectories from 5 to 43 years and asthma relapse from 45 to 53 years of age among those who had a history of asthma at age 43.

BMI Trajectories N=257	**Relapsed Asthma** % (n)	**Crude OR (95%CI) (n=257)**	**Adjusted † OR (95%CI) (n=222)**
Average (n=126)	26·9 (34)	-	-
Low (n=70)	18·6 (13)	0·62 (0·30, 1·27)	1·09 (0·43, 2·75)
Child High-Decreasing (n=40)	25·0 (10)	0·90 (0·39, 2·04)	1·05 (0·35, 3·12)
Child Average-Increasing (n=15)	13·3 (2)	0·42 (0·09, 1·94)	0·61 (0·13, 4·75)
High (n=6)	50·0 (3)	2·71 (0·52, 14·1)	6·87 (0·71, 66·9)

† Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.
* P-value=<0.05

Table S6: P values of the likelihood ratio test for the interaction of selected variables with BMI trajectories to predict an outcome as incident asthma, persistent asthma, and relapsed asthma

Variables interacting with BMI trajectories	**Incident Asthma (P-value)**	**Persistent Asthma (P-value)**	**Relapsed Asthma (P-value)**
Sex	p=0·45	p=0·89	Not possible to check due to insufficient number of observations in trajectories
Current Smoking	p=0·26	p=0·64	p= 0·81
Current BMI	p-= 0·38	p=0·24	Not possible to check due to insufficient number of observations in trajectories

Table S7: Associations between BMI trajectories from 5 to 43 years and BHR at 50 years of age

BMI Trajectories n=562	BHR % (n)	Crude OR (95%CI) (n=562)	Adjusted OR† (95%CI) (n=480)
Average (n=289)	19·7 (57)	-	-
Low (n=149)	24·2 (36)	1·29 (0·81, 2·08)	1·26 (0·74, 2·15)
Child High-Decreasing (n=83)	26·5 (22)	1·47 (0·83, 2·59)	1·69 (0·89, 3·19)
Child Average-Increasing (n=27)	44·4 (12)	**3·26 (1·44, 7·34), ****	**2·89 (1·11, 7·51) ***
High (n=14)	50·0 (7)	**4·07 (1·37, 12·07) ***	**3·47 (1·06, 11·35) ***

† Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.

* P-value=<0.05

** P-value=<0.01

Table S8: Adjusted associations between BMI trajectories from 5 to 43 years and BDR at 53 years of age

BMI Trajectories	n =1912	BDR Mean (SD)	%ΔFVC Co-eff † (CI) N= 1651	BDR Mean (SD)	%ΔFEV$_1$ Co-eff † (CI) N= 1651
Average	950	0·70 (4·0)	-	4·05 (6·9)	-
Low	537	0·64 (4·5)	-0·12 (-0·59, 0·35)	3·84 (5·8)	-0·43 (-1·13, 0·27)
Child High-Decreasing	274	0·22 (3·4)	-0·53 (-1·12, 0·06)	3·61 (4·6)	-0·55 (-1·44, 0·33)
Child Average-Increasing	98	0·53 (3·9)	-0·29 (-1·22, 0·64)	3·30 (4·6)	-1·04 (-2·43, 0·36)
High	53	0·99 (4·4)	0·11 (-1·08, 1·31)	3·57 (5·2)	-0·71 (-2·51, 1·08)

†Sex, Type of Feeding in The First Three Month, No of Siblings, Chest Illness, Tonsillectomy, Pneumonia, Childhood Food Allergy, Bronchitis, Social Class During Childhood, Mother's Employment, Mother's Age, Mother's Asthma, Mother's Smoking, Father's Asthma, Father's Smoking, Adulthood Education, Adulthood Food Allergy, smoking at 45 years

* P-value=<0.05

Table S9: Associations between BMI at 43 years and Incident Asthma, Persistent Asthma, and Relapse Asthma from 43 to 53 years of age.

BMI at 43 years n=4194	n=1298	Incident asthma OR (95%CI) (n=1277)	n=337	Persistent Asthma OR (95%CI) (n=337)	n=222	Relapse Asthma OR (95%CI) (n=220)
Normal (n=1737)	32/564	-	93/142	-	25/105	-
Underweight (n=68)	0/21	1 (empty)	2/3	0.69 (0.04, 11.64)	0/2	1 (empty)
Overweight (n=1568)	28/507	1.18 (0.67, 2.10)	81/121	1.07 (0.59, 1.92)	21/73	1.19 (0.50, 2.81)
Obese (n=821)	17/206	1.67 (0.87, 3.18)	50/71	1.14 (0.56, 2.27)	10/42	1.15 (0.42, 3.15)

Adjusted for sex, type of feeding in the first three months, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.

Table S10: Characteristics of participants lost to follow up from 43 to 53 years compared to those who remained in the study

Characteristics	Retained from 43 to 53 years N=2482	Loss to follow up from 43 to 53 years N=1712	P-values
BMI Trajectory Exposure 5-43 years			0.12
BMI Trajectories – % (n)			
Average	1246 (50·20)	863 (50·41)	
Low	682 (27·48)	438 (25·58)	
Child High-Decreasing	356 (14·34)	236 (13·79)	
Child Average-Increasing	129 (5·20)	116 (6·78)	
High	69 (2·78)	59 (3·45)	
Asthma Outcome			
Ever Asthma at 45 years– n (%)	735 (29·63)	468 (27·38)	0.12
Current Asthma at 45 years– n (%)	469 (27.4)	739 (29.8)	0.10
Childhood Outcome predictors at 7 years			
Childhood Asthma– n (%)	433 (17·69)	278 (16·42)	0.29
Childhood Bronchitis– n (%)	1235 (50·43)	816 (48·17)	0.15
No of Chest illness – n (%)			0.21
Not at All	1519 (63·29)	1098 (65·99)	
1-7 Days	657 (27·38)	424 (25·48)	
8-30 Days	169 (7·04)	107 (6·43)	
More than 30 Days	55 (2·29)	35 (2·10)	
Maternal Asthma– n (%)	248 (10·48)	193 (11·86)	0.17
Paternal Asthma– n (%)	242 (10·40)	175 (11·00)	0.55

Table S11: Characteristics of the sub sample selected for the BMI trajectory development compared to the remaining of the original cohort

Characteristics	Remaining participants in the cohort n=4390	Selected cub-sample in this study n=4194	P-Value
Childhood Food Allergy – n (%)	265 (6·35)	305 (7·41)	0·06
Childhood Asthma – n (%))	688 (16·37)	711 (17·17)	0·33
Mother's Asthma – n (%)	435 (10.98)	441 (11·04)	0·93
Father's Asthma – n (%)	421 (10·89)	417 (10·64)	0·73
Current Asthma at 43– n (%)	419 (27.4)	1208 (28.8)	0.25
Current Asthma at 53– n (%)	365 (32.5)	823 (33.2)	0.69

Table S12: Attrition rate at each follow-up across BMI trajectory groups

	Average (N=2,109)	Low (N=1,120)	Child High-Decreasing (N=592)	Child Average-Increasing (N=245)	High (N=128)
LTFU at 13 years – n (%)	71 (3·37)	45 (4·02)	22 (3·72)	12 (4·90)	3 (2·34)
LTFU at 43 years – n (%)	0	0	0	0	0
LTFU at 53 years – n (%)	862 (40·87)	438 (39·11)	236 (39·86)	115 (46·94)	115 (46·94)

Table S13: Bayesian Information Criteria (BIC) for BMI group-based trajectory modelling according to the number of groups

Significant Models	Number of trajectories & shapes	BIC for total number of participants (n=4194)	BIC for total number of observations (n=20289)
Model 1	3 (1 1 1)	-25892·52	-25899·61
Model 2	3 (1 1 2)	-25861·76	-25869·64
Model 3	**3 (1 1 3)**	**-25848·44**	**-25857·11**
Model 4	4 (1 2 1 1)	-25549·76	-25560·01
Model 5	4 (1 2 2 1)	-25548·41	-25559·44
Model 6	4(1 2 1 3)	-25539·54	-25551·11
Model 7	**4 (1 2 2 2)**	**-25534·41**	**-25546·23**
Model 8	5 (1 1 1 1 3)	-25308·86	-25322·26
Model 9[†]	**5 (1 2 2 1 3)**	**-25307·40**	**-25321·59**

[†]Average posterior probability for the five trajectories in the selected **model 9** were: 0·83, 0·83, 0·81, 0·81, 0·93 respectively.

The numbers in the parentheses depict the functional form (1=linear, 2=quadratic, 3=cubic) of trajectories. For example, Model 3 included 3 trajectories with linear, linear and cubic orders respectively.

Table S14: Weighted associations between BMI trajectories from 5 to 43 years and Incident Asthma from 43 to 53 years of age among those who did not have asthma at age 43.

BMI Trajectories N=7155	Incident Asthma % (n)	Adjusted[†] OR (95%CI) (n=6490)
Average (n=3595)	5.4 (195)	-
Low (n=2025)	5.9 (120)	1.21 (0.73, 2.03)
Child High-Decreasing (n=1045)	4.3 (45)	0.81 (0.42, 1.59)
Child Average-Increasing (n=305)	13.1 (40)	2.64 (1.26, 5.52) *
High (n=185)	18.9 (35)	4.41 (1.87, 10.38) **

[†] Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.

* P-value=<0.05

** P-value=<0.01

Table S15: Weighted associations between BMI trajectories from 5 to 43 years and Persistent Asthma from 43 to 53 years of age among those who have current asthma at age 43.

BMI Trajectories N=2250	Persistent Asthma % (n)	Adjusted† OR (95%CI) (n=2246)
Average (n=1065)	53.1 (565)	-
Low (n=635)	44.9 (285)	0.67 (0.44, 1.09)
Child High-Decreasing (n=345)	74.8 (165)	0.74 (0.45, 1.23)
Child Average-Increasing (n=140)	57.1 (80)	1.03 (0.49, 2.13)
High (n=65)	53.8 (35)	0.82 (0.21, 3.14)

†Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.

Table S16: Weighted associations between BMI trajectories from 5 to 43 years and asthma relapse from 45 to 53 years of age among those who had a history of asthma at age 43.

BMI Trajectories N=1110	Relapsed Asthma % (n)	Adjusted † OR (95%CI) (n=)
Average (n=540)	26.8 (145)	-
Low (n=305)	21.3 (65)	1.09 (0.45, 2.66)
Child High-Decreasing (n=170)	26.5 (45)	1.05 (0.41, 2.68)
Child Average-Increasing (n=70)	14.3 (10)	0.81 (0.16, 4.08)
High (n=25)	60.0 (15)	6.87 (0.97, 44.68)

† Sex, type of feeding in the first three month, no of siblings, chest illness, tonsillectomy, pneumonia, childhood food allergy, bronchitis, social class during childhood, mother's employment, mother's age, mother's asthma, mother's smoking, father's asthma, father's smoking, adulthood education, adulthood food allergy, smoking, and current employment.

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