Variable name	Type	Units	Initial value	Equation	Source	Important assumptions	Submodel
				population*(consumption rate per person/meat per			
chickens arriving from hatcheries	Flow	Chicken/Week	na	chicken)	Model conceptualization	Supply = Demand	Chicken
			Initial Chickens on	chickens arriving from hatcheries-chicken infections			
chicken on farms	Stock	Chicken	Farms	with CPY-"chicken non-infections with CPY"	Model conceptualization		Chicken
initial chickens on farms	Constant	Chicken	na	chicken infections with CPY-"CPY-positive chickens	O Model conceptualization	Arbitrary number	Chicken
CPY-positive chickens	Stock	Chicken		0 slaughtered"	Model conceptualization		Chicken
CF 1-positive chickens	Stock	CHICKEH		chickens on farms*rate of chicken infection from	Woder Conceptualization		CHICKEH
chicken infections with CPY	Flow	Chicken/Week	na	environment	Model conceptualization		Chicken
				chickens on farms*(1-rate of chicken infection from			
chicken non-infections with CPY	Flow	Chicken/Week	na	environment)	Model conceptualization		Chicken
				chicken non-infections with CPY-"slaughtering with cross	S·		
				contamination"-"slaughtering without cross-		This is the final contamination before	
CPY-negative chickens	Stock	Chicken		0 contamination"	Model conceptualization	slaughtering	Chicken
slaughtering without cross-contamination	Elow	Chicken/Week	na	CPY-negative chickens * (1-"rate of cross- contamination")	Model conceptualization		Chicken
staughtering without cross-containmation	TIOW	CHICKEH/ WEEK	IIa	Contamination	Woder Conceptualization		CHICKEH
slaughtering with cross-contamination	Flow	Chicken/Week	na	CPY-negative chickens * "rate of cross-contamination"	Model conceptualization		Chicken
				("CPY-positive chickens slaughtered"+"slaughtering with			
				cross-contamination")*meat per chicken-contaminated			
contaminated meat	Stock	kg		0 meat consumption	Model conceptualization		Chicken
CDV positive shipleans slovebbox 1	Cla	Chicken/Week		CDV positive shiplographs and	Madel	All infected chicken become	Chicken
CPY-positive chickens slaughtered	Flow	Cnicken/week	na	CPY-positive chickens*slaughter rate	Model conceptualization	contaminated meat	Cnicken
				IF THEN ELSE( safe slaughtering policy = 1, ((ZIDZ("CPY-			
				positive chickens",("CPY-negative			
				chickens"+"CPYpositive chickens")))*CPY reproduction in	1		
				chickens)*0.8 , (ZIDZ("CPY-positive chickens",("CPY-			
				negative chickens"+"CPY-positive chickens")))*CPY		Depends on the proportion of infected	
rate of cross-contamination	Variable	1/Week	na	reproductive number in chickens )	Model conceptualization	chicken	Chicken
	Canadana	Va/Chialaa		4.1	5 Denton & Miller, 1988; National Chicken Council 2021		Chialan
meat per chicken	Constant	Kg/Chicken	na	MIN(proportion of contaminated meat * consumption	5 Denton & Miller, 1988; National Chicken Council 2021		Chicken
				rate per person * population, (contaminated		Cannot consume more than there is	
contaminated meat consumption	Flow	Kg/Week	na	meat/week))	Model conceptualization	available	Chicken
		<u></u>		CPY-positive chickens slaughtered+"slaughtering with			
				cross-contamination"+"slaughtering without cross-			
total chickens slaughtered	Variable	Chicken/Week	na	contamination"	Model conceptualization		Chicken
				CPY-positive chickens slaughtered+"slaughtering with			
contaminated slaughtered chickens	Variable	Chicken/Week	na	cross-contamination"	Model conceptualization		Chicken
Proportion of contaminated meat	Variable	Dmnl	na	ZIDZ(contaminated slaughtered chickens, total chickens	Model conceptualization		Chicken
slaughter rate	Constant	1/Week	na na	slaughtered)	3 Calibration		Chicken
January 1 att	Constant	2, WCCK		ZIDZ( "CPY-positive chickens", "CPY-positive	- Cambration		CHICACH
proportion of CPY-positive chickens	Variable	Dmnl	na	chickens"+"CPY-negative chickens")	Model conceptualization		Chicken
					https://files.wakkerdier.nl/app/uploads/2020/10/20151	-	
					422/2020-078-Vleesconsumptie-2019-WUR-		
	_	kg/(Week*Person			Dagevos def.pdf? ga=2.115483654.1629359199.16154		
consumption rate per person	Constant	)	na	0.203+meat consumption behaviour population by 2020 + RAMP((projected population by	61809-1770319697.1615461809		Chicken
				2050-population by 2020)/(weeks per year*30),0,weeks			
population	Variable	Person	na	per year*30)	Model conceptualization		Chicken
week	Constant	Week	na		1 Common sense		Chicken
CPY reproduction in chickens	Constant	1/Week	na	0.5	Parshotam, 2011		Chicken
Infections per kg of meat consumed	Variable	Cases/kg	na	IF THEN ELSE(food safety policy=1, 0.8*5e-05, 5e-05)	Calibration		Cost of Illness
				human CPY infections-asymptomatic infections-			
CPY Cases	Stock	Cases		0 symptomatic infections	Model conceptualization		Cost of Illness
				(contaminated meat consumption*infections per kg of			
human CPY infections	Flow	Cases/Week	na	meat consumed)+rate of human infection from environment	Model conceptualization		Cost of Illness
maman CF 1 illiections	1 IOW	Cases/ Week	TIG.	CHANGE	Model conceptualization		cost or miless
				symptomatic infections-Death by CPY-GBS development			
Acute GE Cases	Stock	Cases		0 GE Recovery-IBD development-ReA development	Model conceptualization		Cost of Illness

				(00) 0 4 . 5			
				(CPY Cases*rate of symptomatic cases)*(P			
matamatic infaction -	Flour	Casas/Maral		TRAIN(weeks per year, TIME STEP, weeks			Cost of Illeres
mptomatic infections	Flow	Cases/Week	na	FINAL TIME)) / TIME STEP	Model conceptualization		Cost of Illness
ase rate of symptomatic cases	Constant	Dmnl	na	h	0.88 Medema et al.		Cost of Illness
				base rate of symptomatic cases*rate of sy			
ate of symptomatic cases	Variable	Dmnl	na	cases modifier	Model conceptualization		Cost of Illness
				(CPY Cases*(1-rate of symptomatic cases)			
				TRAIN(weeks per year, TIME STEP, weeks			
symptomatic infections	Flow	Cases/Week	na	FINAL TIME)) / TIME STEP	Model conceptualization		Cost of Illness
E Recovery	Flow	Cases/Week	na	recovery rate*Acute GE Cases	Model conceptualization		Cost of Illness
ecovery rate	Constant	1/Week	na		0.98125 Mangen et al.		Cost of Illness
eA Cases	Stock	Cases		0 ReA development	Model conceptualization	Chronic disease, does not empty	Cost of Illness
BS Cases	Stock	Cases		0 GBS development	Model conceptualization	Chronic disease, does not empty	Cost of Illness
D Cases	Stock	Cases		0 IBD development	Model conceptualization	Chronic disease, does not empty	Cost of Illness
				<u> </u>	·	Disease burden/cost of illness associated	
						with deaths accounted for within DALY	
						metric. This flow is only used to empty	
eath by CPY	Flow	Cases/Week	na	Acute GE Cases*death rate	Model conceptualization	the cases stock	Cost of Illness
	11011	cases, week	iiu .	Acute de cases deditifate	model conceptualization	the eases stock	cost or initess
						Development of chronic disease	
						The state of the s	
						assumed to all occur subsequent to	
						acute cases. In reality, some	
						campylobacter infections do connect	
eA development	Flow	Cases/Week	na	Acute GE Cases*ReA rate	Model conceptualization	directly to incidence of chronic disease.	Cost of Illness
BS development	Flow	Cases/Week	na	Acute GE Cases*GBS rate	Model conceptualization		Cost of Illness
D development	Flow	Cases/Week	na	Acute GE Cases*IBD rate	Mangen et al.		Cost of Illness
eA rate	Constant	1/Week	na		0.0175 Mangen et al.		Cost of Illness
BS rate	Constant	1/Week	na		0.00075 Mangen et al.		Cost of Illness
						statistics.htm#:*":text=Inflammatory%20 Bowel%20Disease%20Prevalence%20(IB D,%25%20or%202%20million%20adults)	
BD rate	Constant	1/Week	na		0.000125 Mangen et al.		Cost of Illness
and an	Constant	4.0441			0.000377 Marria Marria	Assumed that death only caused by acute symptoms, death from chronic	Controllium
eath rate	Constant	1/Week	na		0.000375 Mangen et al.	cases largely contained within DALYs.	Cost of Illness
				(recovered GE*DALYs per GE Case) + (GBS			
				per GBS Case) + (IBD Cases*DALYs per IBD			
ALY	Variable	DALY	na	Cases*DALYs per ReA Case)	Model conceptualization		Cost of Illness
				((recovered GE*COI per GE Case) + (GBS C GBS Case) + (IBD Cases*COI per IBD Case) Cases*COI per ReA Case	+ (ReA		
ost of Illness	Variable	Euro	na	))*COI modifier	Model conceptualization		Cost of Illness
I modifier	Constant	Dmnl	na		1 Model conceptualization	Used only to test sensitivity	Cost of Illness
LYs per GE Case	Constant	DALY/Cases	na		0.008 Mangen et al.	All undiscounted DALYs	Cost of Illness
LYs per ReA Case	Constant	DALY/Cases	na		0.09 Mangen et al.	All undiscounted DALYs	Cost of Illness
LYs per GBS Case	Constant	DALY/Cases	na		5 Mangen et al.	All undiscounted DALYs	Cost of Illness
ALYs per IBD Case	Constant	DALY/Cases	na		11.6 Mangen et al.	All undiscounted DALYs	Cost of Illness
Il per GE Case	Constant	Euro/Cases	na		190 Mangen et al.		Cost of Illness
OI per ReA Case	Constant	Euro/Cases	na		20 Mangen et al.		Cost of Illness
DI per GBS Case	Constant	Euro/Cases	na		85000 Mangen et al.		Cost of Illness
•					<u> </u>		
I per IBD Case	Constant	Euro/Cases	na		173000 Mangen et al.		Cost of Illness
covered GE	Stock	Cases		0 GE Recovery	Model conceptualization		Cost of Illness
nsumer food consumption behaviour	Constant	Week	na	IF THEN ELSE( (known CPY cases/population	•	0 - Normal consumption	Cost of Illness
onsumer food consumption behaviour		D1		consumer food consumption behaviour th		1 - Reduced consumption due to too	C1-C
ver	Variable	Dmnl	na	)	Model conceptualization	many cases	Cost of Illness
onsumer food consumption behaviour							
reshold	Constant	Cases/Person	na		0.0038 Own interpretation		Cost of Illness
ne to know about CPY cases	Constant	Week	na		1 Own interpretation		Cost of Illness
nown CPY cases	Variable	Cases	na	SMOOTH N(CPY Cases,time to know about CPY Cases, 3)	t CPY cases, Model conceptualization		Cost of Illness

						Natural consumer behavior and	
		kg/(Week*Person		IF THEN ELSE(((consumer food consumption behaviour		government intervention to modify	
	March I.	kg/(week-Person			Administrative Property		C
meat consumption behaviour	Variable	)	na	lever + consumption behaviour policy) = 0), 0 , -0.05 )	Model conceptualization	behavior do not compound	Cost of Illness
				WITH LOOKUP (scenario switch): ([(0,0)-			
rate of symptomatic cases modifier	Variable	Dmnl	na	(12,2)],(0,1),(9,1),(10,0.9),(11,1.1),(12,1.1))	Mangen et al.	Ranges from 0.9 to 1.1 across scenarios	Cost of Illness
fly population	Stock	MFly	initial fly population	fly development-fly deaths	Model conceptualization		Environmental
				DELAY1I(fly development, fly lifetime, fly population/fly			
fly deaths	Flow	MFly/Week	na	lifetime)	Model conceptualization		Environmental
fly development	Flow	MFly/Week	na	fly development rate	Model conceptualization		Environmental
Initial fly population	Constant	MFly	na		1 Model conceptualization		Environmental
ппаагну роранасон	Constant	IVII IY	iiu .	0.	1 Woder conceptualization		Liivii Oliiliciitai
fl., lifesi	Canadana	Made			4 https://www.orkin.com/flies/how-long-do-flies-live		Facility and a state of
fly lifetime	Constant	Week	na	<u>'</u>	4 https://www.orkin.com/illes/now-long-do-illes-live		Environmental
					Blanckenhorn, W. U. (1997). Effects of temperature on		
					growth, development and diapause in the yellow dung		
		MFly/(degree*We	2		fly - against all the rules? Oecologia, 111(3), 318-324.		
fly population growth per degree	Constant	ek)	na	0.002	4 doi:10.1007/s004420050241		Environmental
					Blanckenhorn, W. U. (1997). Effects of temperature on		
					growth, development and diapause in the yellow dung		
					fly - against all the rules? Oecologia, 111(3), 318–324.		F
base fly population development rate	Constant	MFly/Week	na	-0.009	1 doi:10.1007/s004420050241		Environmental
					Blanckenhorn, W. U. (1997). Effects of temperature on		
					growth, development and diapause in the yellow dung		
				base fly population development rate + fly population	fly - against all the rules? Oecologia, 111(3), 318-324.		
non-diapause development rate	Variable	MFly/Week	na	growth per degree* temperature	doi:10.1007/s004420050241		Environmental
non diapause development rate	Variable	in ig week	110	growth per degree temperature	4011201200775001120050211		Litti Olimentai
					Blanckenhorn, W. U. (1997). Effects of temperature on		
					growth, development and diapause in the yellow dung		
					fly - against all the rules? Oecologia, 111(3), 318–324.		
diapause development rate	Constant	MFly/Week	na	0.000	5 doi:10.1007/s004420050241		Environmental
					Blanckenhorn, W. U. (1997). Effects of temperature on		
					growth, development and diapause in the yellow dung		
				IF THEN ELSE/temperature > 4 "non-dianause		Relow 4 degrees fly development enters	
fly dayslanment rate	Variable	MEly/Mook	2	IF THEN ELSE(temperature > 4, "non-diapause	fly - against all the rules? Oecologia, 111(3), 318–324.	Below 4 degrees fly development enters	Environmental
fly development rate	Variable	MFly/Week	na	IF THEN ELSE(temperature > 4, "non-diapause development rate" ,diapause development rate)		Below 4 degrees fly development enters diapause	Environmental
fly development rate	Variable	MFly/Week	na	development rate" ,diapause development rate)	fly - against all the rules? Oecologia, 111(3), 318–324.		Environmental
fly development rate	Variable	MFly/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per	fly - against all the rules? Oecologia, 111(3), 318–324.		Environmental
fly development rate	Variable	MFly/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-	fly - against all the rules? Oecologia, 111(3), 318–324.		Environmental
fly development rate	Variable	MFly/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per	fly - against all the rules? Oecologia, 111(3), 318–324.		Environmental
fly development rate	Variable	MFly/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241		Environmental
		·		development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature+minimum average weekly temperature+minimum average weekly	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241		
fly development rate	Variable Variable	MFly/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241		Environmental Environmental
temperature	Variable	degree	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature+minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization		Environmental
		·		development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature+minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241		
temperature minimum average weekly temperature	Variable Variable	degree degree	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature+minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization		Environmental Environmental
temperature minimum average weekly temperature maximum average weekly temperature	Variable  Variable  Variable	degree degree degree	na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI		Environmental  Environmental  Environmental
temperature minimum average weekly temperature	Variable Variable	degree degree	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature+minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization		Environmental Environmental
temperature minimum average weekly temperature maximum average weekly temperature	Variable  Variable  Variable	degree degree degree	na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI		Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi	Variable  Variable  Variable  Constant	degree degree degree Dmnl	na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature+minimum average weekly temperature+minimum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse		Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature	Variable  Variable  Variable	degree degree degree	na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature)/2))+temperature increase	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI		Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi	Variable  Variable  Variable  Constant	degree degree degree Dmnl	na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature+minimum average weekly temperature+minimum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse		Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies	Variable Variable Constant Variable	degree degree Dmnl	na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens"	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization		Environmental Environmental Environmental Environmental Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission	Variable Variable Variable Constant Variable Constant	degree degree Dmnl Dmnl Dmnl	na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens"  0.5	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization Calibration		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission	Variable Variable Variable Constant Variable Constant	degree degree Dmnl Dmnl Dmnl	na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5  0.35	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization Calibration		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission base infectious flies	Variable Variable Variable Constant Variable Constant Constant	degree degree Dmnl Dmnl Dmnl Dmnl	na na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature-minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission" * "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization  Calibration  Calibration		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission	Variable Variable Variable Constant Variable Constant	degree degree Dmnl Dmnl Dmnl	na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+(maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1, 0.8, 1)	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization Calibration		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission base infectious flies infectious flies	Variable Variable Constant Variable Constant Variable Constant Constant	degree degree Dmnl Dmnl Dmnl Dmnl	na na na na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+(maximum average weekly temperature+minimum average weekly temperature+minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI Archimedes of Syracuse  Model conceptualization Calibration Calibration Calibration Model conceptualization		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission base infectious flies	Variable Variable Constant Variable Constant Variable Constant Constant	degree degree Dmnl Dmnl Dmnl Dmnl	na na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+(maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1, 0.8, 1)	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization  Calibration  Calibration		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission base infectious flies infectious flies	Variable Variable Constant Variable Constant Variable Constant Constant	degree degree Dmnl Dmnl Dmnl Dmnl	na na na na na na na na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+(maximum average weekly temperature+minimum average weekly temperature+minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI Archimedes of Syracuse  Model conceptualization Calibration Calibration Calibration Model conceptualization		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
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temperature minimum average weekly temperature maximum average weekly temperature pi proportion of infectious flies chance of chicken-to-fly transmission base infectious flies infectious flies rate of chicken infection from environment	Variable  Variable  Variable  Constant  Variable  Constant  Variable  t Variable	degree degree DmnI DmnI DmnI DmnI DmnI JmnI	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPV-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1, 0.8, 1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies *rate of chuman exposure to infectious flies *population + (infection risk from birds *	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI Archimedes of Syracuse  Model conceptualization Calibration Calibration Model conceptualization Model conceptualization		Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi  proportion of infectious flies chance of chicken-to-fly transmission base infectious flies infectious flies rate of chicken infection from environment	Variable Variable Constant Variable Constant Variable t Variable Variable Variable	degree degree Dmnl Dmnl Dmnl Dmnl Jmnl MFly 1/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+(maximum average weekly temperature)/2)+temperature+minimum average weekly temperature-increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies*rate of human exposure to infectious flies*population + (infection risk from birds * population)	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI Archimedes of Syracuse  Model conceptualization Calibration Calibration Model conceptualization  Model conceptualization  Model conceptualization  Model conceptualization		Environmental
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temperature minimum average weekly temperature maximum average weekly temperature pi  proportion of infectious flies chance of chicken-to-fly transmission base infectious flies infectious flies rate of chicken infection from environment	Variable Variable Constant Variable Constant Variable t Variable Variable Variable	degree degree Dmnl Dmnl Dmnl Dmnl Jmnl MFly 1/Week	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies*rate of human exposure to infectious flies*population + (infection risk from birds * population) 0.1	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI 3 KNMI Archimedes of Syracuse  Model conceptualization Calibration Calibration Model conceptualization  Model conceptualization  Model conceptualization  Model conceptualization		Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi  proportion of infectious flies chance of chicken-to-fly transmission base infectious flies  infectious flies rate of chicken infection from environment human infection from environment base chicken exposure rate	Variable Variable Variable Constant Variable Constant Variable t Variable Variable Constant	degree degree Dmnl Dmnl Dmnl Dmnl Jmv 1/Week Cases/Week 1/Week 1/(MFly*Week)	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+((maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies*rate of human exposure to infectious flies*population + (infection risk from birds * population) 0.1  base human exposure rate * SMOOTH( IF THEN	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization  Calibration  Model conceptualization  Model conceptualization  Model conceptualization  Model conceptualization  Calibration		Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi  proportion of infectious flies chance of chicken-to-fly transmission base infectious flies  infectious flies rate of chicken infection from environment human infection from environment base chicken exposure rate	Variable Variable Variable Constant Variable Constant Variable t Variable Variable Constant	degree degree Dmnl Dmnl Dmnl Dmnl Jmnl Cmnl Dmnl Dmnl Dmnl	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies*rate of human exposure to infectious flies*population + (infection risk from birds * population) 0.1	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization  Calibration  Model conceptualization  Model conceptualization  Model conceptualization  Model conceptualization  Calibration		Environmental  Environmental
temperature minimum average weekly temperature maximum average weekly temperature pi  proportion of infectious flies chance of chicken-to-fly transmission base infectious flies  infectious flies rate of chicken infection from environment human infection from environment base chicken exposure rate	Variable  Variable  Variable  Constant  Variable  Constant  Variable  t Variable  Variable  Variable  Variable  Variable	degree degree Dmnl Dmnl Dmnl Dmnl Jmv 1/Week Cases/Week 1/Week 1/(MFly*Week)	na	development rate" ,diapause development rate)  ((-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year))*((maximum average weekly temperature-minimum average weekly temperature)/2)+((maximum average weekly temperature)/2)+((maximum average weekly temperature)/2))+temperature increase  2  ARCCOS(-1)  base infectious flies + "chance of chicken-to-fly transmission"* "proportion of CPY-positive chickens" 0.5 0.35  fly population*proportion of infectious flies * IF THEN ELSE( fly population control policy = 1,0.8,1) base chicken exposure rate+(infectious flies*rate of chicken exposure to infectious flies) infectious flies*rate of human exposure to infectious flies*population + (infection risk from birds * population) 0.1  base human exposure rate * SMOOTH( IF THEN	fly - against all the rules? Oecologia, 111(3), 318–324. doi:10.1007/s004420050241  Model conceptualization  4 KNMI  3 KNMI  Archimedes of Syracuse  Model conceptualization  Calibration  Model conceptualization  Model conceptualization  Model conceptualization  Model conceptualization  Calibration		Environmental  Environmental

		Cases/(MFly*Wee					
base human exposure rate	Constant	k*Person)	na	0.001	Calibration		Environmental
Dasc Haman exposure rate	constant	K i cisony	110	RAMP(temperature increase by 2050/(weeks per	Cambration		Limitorini
average temperature increase	Variable	degree	na	year*30),0,weeks per year*30)	Model conceptualization		Environmental
temperature switch	Variable	Dmnl	na	WITH LOOKUP (scenario switch):([(0,0)-(12,2)],(0,0),(7,0),(8,2),(9,1),(10,0),(11,0),(12,2) )	Model conceptualization	0 - No change 1 - Linear change 2 - Faster summer warming than winter warming	Environmental
				IF THEN ELSE(temperature switch = 0,0,(IF THEN ELSE(temperature switch = 2,(-1)*(SIN(2*pi*(Time+start of year offset)/weeks per year)*0.8*average temperature increase)+average temperature			
temperature increase	Variable	degree	na	increase, average temperature increase))) WITH LOOKUP (scenario switch): ([(0,0)-	Bresser et al, 2006		Environmental
				(12,2)],(0,1.5),(3,1.5),(4,1),(5,1.5),(6,1.5),(7,1.5),(8,2),(9,		Ranges from 1 to 2 across the different	
temperature increase by 2050	Constant	degree	na	1.5),(11,1.5),(12,2))	KNMI 14' klimaatscenario's voor Nederland	scenarios	Environmental
Infection risk from birds	Constant	Cases/(Week*Per	na	2.5E-0.5	Calibration		Environmental
infection risk from birds	Constant	son)	па	2.5E-U.5	Calibration	Needed to make the sinusoidal curve for	
start of year offset	Variable	Week	na	,	8 KNMI	the temperature to match the appropriate time of year.	Environmental
population by 2020	Constant	Person	na	1.73E+0		appropriate time or year.	Environmental
				WITH LOOKUP (scenario switch): ([(0,0)-(12,3e+07)],(0,1.94e+07),(1,1.94e+07),(2,2.16e+07),(3,1.	. CBS (https://www.cbs.nl/en-gb/news/2020/51/forecast-		
projected population by 2050	Variable	Person	na	71e+07),(4,1.94e+07),(11,1.94e+07),(12,2.16e+07))	population-growth-unabated-in-the-next-50-years)	across scenarios	Environmental
				IF THEN ELSE(exposure control policy switch = 1, IF THEN ELSE(temperature > temperature trigger for exposure			
exposure control policy	Variable	Dmnl	na	control policy, 1, 0), 0)	Policy conceptualization		Policies
temperature trigger for exposure control		4		24	O Dell'es essent ell'estite		B-P-t-
policy	Constant	degree	na	20	0 Policy conceptualization	0 - No policy	Policies
exposure control policy switch	Constant	Dmnl	na	(	0 Policy conceptualization	1 - Policy implemented	Policies
number of weeks needed to adopt policy	Constant	Week	na	:	2 Policy conceptualization		Policies
				IF THEN ELSE(fly population control policy switch = 1, IF THEN ELSE( temperature > temperature trigger for fly			
fly population control policy	Variable	Dmnl	na	population control policy , 1 , 0 ), 0 )	Policy conceptualization		Policies
temperature trigger for fly population							
control policy	Constant	degree	na	20	0 Policy conceptualization		Policies
fly population control policy switch	Constant	Dmnl	na	(	0 Policy conceptualization	0 - No policy 1 - Policy implemented	Policies
				IF THEN ELSE(safe slaughtering policy switch = 1, IF THEN ELSE(Cost of Illness-COI accumulated a year ago >			
safe slaughtering policy	Variable	Dmnl	na	COI trigger for slaughtering policy , 1 , 0), 0)	Policy conceptualization		Policies
COI trigger for slaughtering policy	Constant	Euro	na	1.50E+07	7 Policy conceptualization		Policies
safe slaughtering policy switch	Constant	Dmnl	na	(	0 Policy conceptualization	0 - No policy 1 - Policy implemented	Policies
				IF THEN ELSE(consumption behaviour policy switch = 0, 0, IF THEN ELSE ((Cost of Illness-COI accumulated a year ago) <coi behaviour="" consumption="" for="" policy,0,<="" td="" trigger=""><td>r</td><td></td><td></td></coi>	r		
consumption behaviour policy	Variable	Dmnl	na	(PULSE(weeks per year,1500)*1)))	Policy conceptualization		Policies
COI accumulated a year ago	Level	Euro	na	DELAY FIXED (Cost of Illness, weeks per year,0)	Policy conceptualization		Policies
COI trigger for consumption behaviour policy	Constant	Euro	na	2.20E+07	7 Policy conceptualization		Policies
consumption behaviour policy switch	Constant	Dmnl	na		Policy conceptualization	0 - No policy 1 - Policy implemented	Policies
	Sonstant	2		IF THEN ELSE( food safety policy switch = 1, IF THEN ELSE(Cost of Illness-COI accumulated a year ago > COI	, Ionocpidalization		
food safety policy	Variable	Dmnl	na	trigger for food safety policy , 1 , 0 ), 0)	Policy conceptualization		Policies
COI trigger for food safety policy	Constant	Euro	na		7 Policy conceptualization		Policies
food safety policy switch	Constant	Dmnl	na		Policy conceptualization	0 - No policy 1 - Policy implemented	Policies
rood surety policy switch	Constant	DITIIII	nu	(	o i oney conceptualization	1 Toney implemented	i Olicies