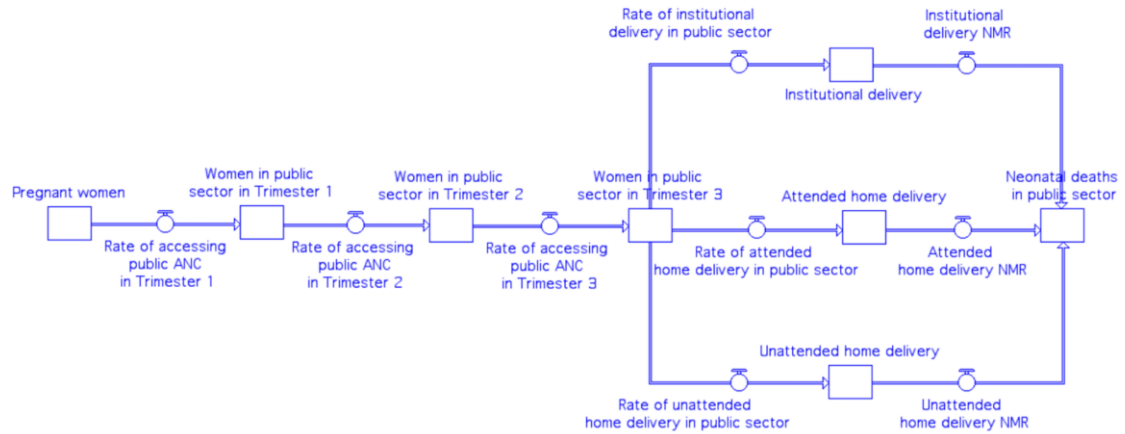


Supplementary Material 1

Insert Figure S1 here

Figure S1: Stock and Flow diagram of public sector health-seeking



Key ANC: antenatal care NMR: neonatal mortality rate

Supplementary Material 2

A cohort of 60 women were purposively sampled from urban and rural Punjab, Pakistan. A total of 258 depth interviews and 60 hours of direct observations were conducted at 3 monthly intervals during the course of pregnancy and up to 3 months post-partum with: the pregnant women, families and all care providers involved. Additionally, 35 regional public healthcare providers NOT directly involved in the care of the 60 women were also interviewed. A mapping of health seeking behaviours and drivers together with mother and neonate outcomes was completed. Comparison of this cohort with national level data is presented below [Table 1].

Table. 1 Country and sample cohort social epidemiology profile [PDHS 2012-13]		
Social determinant	Pakistan	Sample
Socio-demographic factors and social structure		
Total fertility rate ¹ (%)	3.0	3.3
Urban population (%)	36	35
Population in lower wealth quantiles (%)	60	62
Education level and gender discrimination (status of women)		
Adult literacy rate (female)	34.6	50
Primary schooling (female)	62	-
Secondary schooling (female)	29	28.3
¹ Total fertility rate: calculated as average number of births per woman in a population group, if the woman survives from birth through the end of her reproductive life.		

Supplementary Material 3

Combinations of service uptake rate and trimester

Intervention 1			
	25% coverage rate	50% coverage rate	75% coverage rate
Trimester 1	25% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 1	50% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 1	75% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 1
Trimester 2	25% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 2	50% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 2	75% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 2
Trimester 3	25% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 3	50% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 3	75% consumers previously in Pathway A moved to Pathway B, C, and D evenly in trimester 3
Intervention 2			
	25% coverage rate	50% coverage rate	75% coverage rate
Trimester 1	25% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 1	50% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 1	75% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 1
Trimester 2	25% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 2	50% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 2	75% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 2
Trimester 3	25% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 3	50% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 3	75% consumers previously in Pathway A moved to Pathway B and D evenly in trimester 3
Intervention 3			
	25% coverage rate	50% coverage rate	75% coverage rate
Childbirth	25% consumers previously chose unattended home delivery moved to institutional delivery	50% consumers previously chose unattended home delivery moved to institutional delivery	75% consumers previously chose unattended home delivery moved to institutional delivery
Intervention 4			
	25% coverage rate	50% coverage rate	75% coverage rate
Childbirth	25% consumers previously chose unattended home delivery moved to attended home delivery	50% consumers previously chose unattended home delivery moved to attended home delivery	75% consumers previously chose unattended home delivery moved to attended home delivery

Initial model conditions reflecting the proportion of women in each pathway (service sector)

Stock	Stock Notation	Initial Value: Proportion
Entering Pathway A in Trimester 1	A1	0.48
Entering Pathway B in Trimester 1	B1	0.10
Entering Pathway C in Trimester 1	C1	0.29
Entering Pathway D in Trimester 1	D1	0.10
Entering Pathway E in Trimester 1	E1	0.02
Staying in Pathway A in Trimester 2	A2	0.54
Staying in Pathway B in Trimester 2	B2	0.33
Staying in Pathway C in Trimester 2	C2	0.82
Staying in Pathway D in Trimester 2	D2	0.33
Staying in Pathway E in Trimester 2	E2	1.00
Staying in Pathway A Trimester 3	A3	0.80
Staying in Pathway B in Trimester 3	B3	0.55
Staying in Pathway C in Trimester 3	C3	0.84
Staying in Pathway D in Trimester 3	D3	0.67
Staying in Pathway E in Trimester 3	E3	0.3
Entering Pathway A institutional delivery	InstDeA	0.21
Entering Pathway A attended home delivery	AnDeA	0.65
Entering Pathway A unattended home delivery	UnDeA	0.14
Entering Pathway B institutional delivery	InstDeB	0.00
Entering Pathway B attended home delivery	AnDeB	0.78
Entering Pathway B unattended home delivery	UnDeB	0.22
Entering Pathway C institutional delivery	InstDeC	0.50
Entering Pathway C attended home delivery	AnDeC	0.27
Entering Pathway C unattended home delivery	UnDeC	0.23
Entering Pathway D institutional delivery	InstDeD	0.00
Entering Pathway D attended home delivery	AnDeD	0.62
Entering Pathway D unattended home delivery	UnDeD	0.38
Entering Pathway E institutional delivery	InstDeE	0.00
Entering Pathway E attended home delivery	AnDeE	1.00
Entering Pathway E unattended home delivery	UnDeE	0.00

Baseline model parameters

Parameter	Notation	Value
Rate of not seeking care services in Trimester 1	A1	0.48(28/58)
Rate of seeking care services in <i>public</i> domain in Trimester 1	B1	0.10(6/58)
Rate of seeking care services in <i>private</i> domain in Trimester 1	C1	0.29(17/58)
Rate of seeking care services in <i>traditional</i> domain in Trimester 1	D1	0.10(6/58)
Rate of seeking care services in <i>charity</i> domain in Trimester 1	E1	0.02(1/58)
Rate of not seeking care services in Trimester 2	A2	0.54(15/28)
Rate of starting accessing services in <i>public</i> domain in Trimester 2	AB2	0.25(7/28)
Rate of starting accessing services in <i>private</i> domain in Trimester 2	AC2	0.21(6/28)
Rate of starting accessing services in <i>traditional</i> domain in Trimester 2	AD2	0.00(0/28)
Rate of starting accessing services in <i>charity</i> domain in Trimester 2	AE2	0.00(0/28)
Rate of keeping seeking care services in <i>public</i> domain Trimester 2	B2	0.33(2/6)
Rate of stopping accessing services in <i>public</i> domain Trimester 2	BA2	0.00(0/6)
Rate of switching from <i>public</i> to <i>private</i> domain in Trimester 2	BC2	0.67(4/6)
Rate of switching from <i>public</i> to <i>traditional</i> domain in Trimester 2	BD2	0.00(0/6)
Rate of switching from <i>public</i> to <i>charity</i> domain in Trimester 2	BE2	0.00(0/6)
Rate of keeping seeking care services in <i>private</i> domain Trimester 2	C2	0.82(14/17)
Rate of stopping accessing services in <i>private</i> domain Trimester 2	CA2	0.00(0/17)
Rate of switching from <i>private</i> to <i>public</i> domain in Trimester 2	CB2	0.00(0/17)
Rate of switching from <i>private</i> to <i>traditional</i> domain in Trimester 2	CD2	0.06(1/17)
Rate of switching from <i>private</i> to <i>charity</i> domain in Trimester 2	CE2	0.12(2/17)
Rate of keeping seeking care services in <i>traditional</i> domain Trimester 2	D2	0.33 (2/6)
Rate of stopping accessing services in <i>traditional</i> domain Trimester 2	DA2	0.00(0/6)
Rate of switching from <i>traditional</i> to <i>public</i> domain in Trimester 2	DB2	0.33 (2/6)
Rate of switching from <i>traditional</i> to <i>private</i> domain in Trimester 2	DC2	0.33 (2/6)
Rate of switching from <i>traditional</i> to <i>charity</i> domain in Trimester 2	DE2	0.00(0/6)
Rate of keeping seeking care services in <i>charity</i> domain Trimester 2	E2	1.00(1/1)
Rate of stopping accessing services in <i>charity</i> domain Trimester 2	EA2	0.00(0/1)
Rate of switching from <i>charity</i> to <i>public</i> domain in Trimester 2	EB2	0.00(0/1)
Rate of switching from <i>charity</i> to <i>private</i> domain in Trimester 2	EC2	0.00(0/1)
Rate of switching from <i>charity</i> to <i>traditional</i> domain in Trimester 2	ED2	0.00(0/1)
Rate of not seeking care services in Trimester 3	A3	0.80(12/15)
Rate of starting accessing services in <i>public</i> domain in Trimester 3	AB3	0.13(2/15)
Rate of starting accessing services in <i>private</i> domain in Trimester 3	AC3	0.00(0/15)
Rate of starting accessing services in <i>traditional</i> domain in Trimester 3	AD3	0.07(1/15)
Rate of starting accessing services in <i>charity</i> domain in Trimester 3	AE3	0.00(0/15)
Rate of keeping seeking care services in <i>public</i> domain Trimester 3	B3	0.55(6/11)
Rate of stopping accessing services in <i>public</i> domain Trimester 3	BA3	0.00(0/11)
Rate of switching from <i>public</i> to <i>private</i> domain in Trimester 3	BC3	0.27(3/11)
Rate of switching from <i>public</i> to <i>traditional</i> domain in Trimester 3	BD3	0.18(2/11)
Rate of switching from <i>public</i> to <i>charity</i> domain in Trimester 3	BE3	0.00 (0/11)
Rate of keeping seeking care services in <i>private</i> domain Trimester 3	C3	0.84(22/26)
Rate of stopping accessing services in <i>private</i> domain Trimester 3	CA3	0.08(2/26)

Appendix 4 continued

Rate of switching from <i>private</i> to <i>public</i> domain in Trimester 3	CB3	0.00 (0/26)
Rate of switching from <i>private</i> to <i>traditional</i> domain in Trimester 3	CD3	0.08(2/26)
Rate of switching from <i>private</i> to <i>charity</i> domain in Trimester 3	CE3	0.00 (0/26)
Rate of keeping seeking care services in <i>traditional</i> domain Tri 3	D3	0.67(2/3)
Rate of stopping accessing services in <i>traditional</i> domain Tri 3	DA3	0.00 (0/3)
Rate of switching from <i>traditional</i> to <i>public</i> domain in Trimester 3	DB3	0.33(1/3)
Rate of switching from <i>traditional</i> to <i>private</i> domain in Trimester 3	DC3	0.00 (0/3)
Rate of switching from <i>traditional</i> to <i>charity</i> domain in Trimester 3	DE3	0.00 (0/3)
Rate of keeping seeking care services in <i>charity</i> domain in Trimester 3	E3	0.33(1/3)
Rate of stopping accessing services in <i>charity</i> domain in Trimester 3	EA3	0.00 (0/3)
Rate of switching from <i>charity</i> to <i>public</i> domain in Trimester 3	EB3	0.00 (0/3)
Rate of switching from <i>charity</i> to <i>private</i> domain in Trimester 3	EC3	0.33(1/3)
Rate of switching from <i>charity</i> to <i>traditional</i> domain in Trimester 3	ED3	0.33(1/3)
Rate of institutional delivery with no service in Trimester 3	InstDeA	0.21(3/14)
Rate of attended home delivery with no service in Trimester 3	AnDeA	0.65(9/14)
Rate of unattended home delivery with no service in Trimester 3	UnDeA	0.14(2/14)
Rate of institutional delivery with <i>public</i> service in Trimester 3	InstDeB	0.00(0/9)
Rate of attended home delivery with <i>public</i> service in Trimester 3	AnDeB	0.78(7/9)
Rate of unattended home delivery with <i>public</i> service in Trimester 3	UnDeB	0.22(2/9)
Rate of institutional delivery with <i>private</i> service in Trimester 3	InstDeC	0.50(13/26)
Rate of attended home delivery with <i>private</i> service in Trimester 3	AnDeC	0.27(7/26)
Rate of unattended home delivery with <i>private</i> service in Trimester 3	UnDeC	0.23(6/26)
Rate of institutional delivery with <i>traditional</i> service in Trimester 3	InstDeD	0.00(0/8)
Rate of attended home delivery with <i>traditional</i> service in Trimester 3	AnDeD	0.62(5/8)
Rate of unattended home delivery with <i>traditional</i> service in Trimester 3	UnDeD	0.38(3/8)
Rate of institutional delivery with <i>charity</i> service in Trimester 3	InstDeE	0.00(0/1)
Rate of attended home delivery with <i>charity</i> service in Trimester 3	AnDeE	1.00(1/1)
Rate of unattended home delivery with <i>charity</i> service in Trimester 3	UnDeE	0.00(0/1)
Neonatal mortality rate of institutional delivery	NNMRi	2.85%
Neonatal mortality rate of attended home delivery	NNMRa	3.50%
Neonatal mortality rate of unattended home delivery	NNMRu	4.88%
Neonatal mortality of institutional delivery in Pathway A	NNMiA	2.85%
Neonatal mortality of attended home delivery in Pathway A	NNMaA	3.50%
Neonatal mortality of unattended home delivery in Pathway A	NNMuA	4.88%
Neonatal mortality of institutional delivery in Pathway B	NNMiB	2.85%
Neonatal mortality of attended home delivery in Pathway B	NNMaB	3.50%
Neonatal mortality of unattended home delivery in Pathway B	NNMuB	4.88%
Neonatal mortality of institutional delivery in Pathway C	NNMiC	2.85%
Neonatal mortality of attended home delivery in Pathway C	NNMaC	3.50%
Neonatal mortality of unattended home delivery in Pathway C	NNMuC	4.88%
Neonatal mortality of institutional delivery in Pathway D	NNMiD	2.85%
Neonatal mortality of attended home delivery in Pathway D	NNMaD	3.50%
Neonatal mortality of unattended home delivery in Pathway D	NNMuD	4.88%

Appendix 4 continued

Neonatal mortality of institutional delivery in Pathway E	NNMiE	2.85%
Neonatal mortality of attended home delivery in Pathway E	NNMaE	3.50%
Neonatal mortality of unattended home delivery in Pathway E	NNMuE	4.88%
