**Public managers’ trust in citizens and their preferences for behavioral policy instruments**

Appendices

**Appendix 1 – List of local policy objectives and types of policy instrument**

|  |
| --- |
| **Policy case 1: Improving healthy eating habits in municipal offices’ restaurants** |
| 1 - Stick | The removal of unhealthy food from the menu  |
| 2 - Carrot | A 20% increase in the price of unhealthy food |
| 3 - Sermon | Information campaigns to inform public personnel about the disadvantages of unhealthy eating habits |
| 4 – Nudge I | Placing unhealthy food on a less visible place |
| 5 – Nudge II | Organizing a once-a-week healthy standard menu  |
|  |  |
| **Policy case 2: Increasing dog owners’ habit of cleaning up dog droppings in public spaces** |
| 1 - Stick | Increased police oversight  |
| 2 - Carrot | The free provision of dog waste bags by the municipality |
| 3 - Sermon | Information campaigns to inform dog owners about the nuisance of dog droppings |
| 4 – Nudge I | Placing highly visible and user-friendly dog dropping garbage bins |
| 5 – Nudge II | Appealing to dog owners’ sense of responsibility through window posters |
| **Policy case 3: Reducing speeding by cars and other motorized vehicles in the vicinity of primary schools** |
| 1 - Stick | Additional speeding checks in school zones |
| 2 - Carrot | Increase of administrative sanctions (fines) for speeding  |
| 3 - Sermon | Information campaign to inform drivers of the risk of speeding |
| 4 – Nudge I | The modification of road surface markings and signals |
| 5 – Nudge II | A digital speeding display using direct feedback in the form of emoticons |

**Appendix 2 - Relative preferences for policy instrument types per case (in odds ratios; based on the null models)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Instruments** | **Case 1 – Healthy Eating Habits** | **Case 2 – Dog Droppings** | **Case 3 – Speeding in a school zone** |
|  | OR | SE | OR | SE | OR | SE |
| Carrot | 1 |  | 1 |  | 1 |  |
| Stick | 1.155 (.16) | 1.188 (.16) | 1.337\* (.176) |
| Sermon | 1.670\*\*\* (.214) | 1.673\*\*\* (.21) | 1.347\* (.177) |
| Nudge 1 | 1.608\*\*\* (.208) | 1.624\*\*\* (.205) | 1.564\*\*\* (.199) |
| Nudge 2 | 1.742\*\*\* (.222) | 1.406\*\* (.183) | 1.644\*\*\* (.207) |

**Appendix 3 - Parameter estimates of the rank-ordered logistic regression (Models 1 to 9) (estimates in odds ratios, standard errors between brackets)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameters** | **Case 1** | **Case 2** | **Case 3** |
|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|  | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE |
| Intercept Carrot | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  |
| Intercept Stick | 1.351 (1.334) | .479 (.624) | .577 (.838) | 1.036 (1.106) | 10.65 (14.712) | 16,21 (24,227) | ,731 (,704) | 1,314 (1,625) | 1,097 (,148) |
| Intercept Sermon | .502 (.554) | .384 (.539) | .92 (1.439) | 3.8 (4.094) | 2.962 (4.065) | 3,16 (4,804) | ,685 (,719) | ,171 (,231) | ,183 (,272) |
| Intercept Nudge 1 | 1.363 (1.411) | .922 (1.225) | .959 (1.426) | 2.506 (2.61) | 3.866 (5.118) | 5,586 (8,205) | 1,504 (1,624) | ,173 (,246) | ,094 (,145) |
| Intercept Nudge 2 | 2.769 (3.084) | 1.495 (2.111) | 3.893 (6.118) | 11.17 (11.951) | 23.13\* (30.159) | 20,33\* (28,629) | 3,761 (3,901) | 1,218 (1,625) | ,913 (1,31) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ability\*Carrot |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |
| Ability\*Stick |  |  | 1.047 (.131) | 1.056 (.133) |  |  | .976 (.128) | ,993 (,132) |  |  | 1,086 (,131) | 1,082 (,132) |
| Ability\*Sermon |  |  | 1.058 (.145) | 1.075 (.149) |  |  | 1.174 (.157) | 1,18 (,159) |  |  | 1,22 (,154) | 1,217 (,154) |
| Ability\*Nudge 1 |  |  | 1.069 (.14) | 1.073 (.142) |  |  | .827 (.109) | ,834 (,111) |  |  | 1,129 (,152) | 1,118 (,151) |
| Ability\*Nudge 2 |  |  | 1.154 (.161) | 1.183 (.167) |  |  | .969 (.125) | ,964 (,126) |  |  | 1,081 (,143) | 1,073 (,143) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Benevolence\*Carrot |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |
| Benevolence\*Stick |  |  | 1.112 (.179) | 1.109 (.179) |  |  | .659\*(.11) | 0,654\* (,11) |  |  | ,803 (,121) | ,798 (,12) |
| Benevolence\*Sermon |  |  | .908 (.169) | .928 (.173) |  |  | .863 (.15) | 0,862 (,15) |  |  | ,935 (,155) | ,933 (,155) |
| Benevolence\*Nudge 1 |  |  | .882 (.152) | .789 (.153) |  |  | 1.02 (.173) | 1,024 (,175) |  |  | 1,155 (,201) | 1,139 (,199) |
| Benevolence\*Nudge 2 |  |  | .779 (.138) | .888 (.139) |  |  | .861 (.136) | 0,861 (,137) |  |  | ,958 (,159) | ,952 (,158) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Integrity\*Carrot |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |  |  | 1 |  | 1 |  |
| Integrity\*Stick |  |  | 1.115 (.178) | 1.126 (.182) |  |  | .775 (.121) | ,789 (,125) |  |  | ,886 (,134) | ,876 (,135) |
| Integrity\*Sermon |  |  | 1.071 (.186) | 1.128 (.201) |  |  | .955 (.155) | ,954 (,158) |  |  | 1,151 (,186) | 1,153 (,191) |
| Integrity\*Nudge 1 |  |  | 1.121 (.192) | 1.243 (.195) |  |  | 1.06 (.172) | 1,078 (,181) |  |  | 1,323 (,224) | 1,279 (,221) |
| Integrity\*Nudge 2 |  |  | 1.179 (.206) | 1.123 (.221) |  |  | .956 (.151) | ,94 (,153) |  |  | 1,249 (,208) | 1,222 (,211) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Propensity to Trust\*Carrot |  |  |  |  | 1 |  |  |  |  |  | 1 |  |  |  |  |  | 1 |  |
| Propensity to Trust\*Stick |  |  |  |  | .957 (.131) |  |  |  |  | ,906 (,124) |  |  |  |  | 1,051 (,137) |
| Propensity to Trust\*Sermon |  |  |  |  | .815 (.127) |  |  |  |  | ,988 (,141) |  |  |  |  | ,995 (,139) |
| Propensity to Trust\*Nudge 1 |  |  |  |  | .991 (.141) |  |  |  |  | ,922 (,132) |  |  |  |  | 1,15 (,163) |
| Propensity to Trust\*Nudge 2 |  |  |  |  | .801 (.121) |  |  |  |  | 1,041 (,142) |  |  |  |  | 1,077 (,15) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Age\*Carrot | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  |
| Age\*Stick | 1.001 (.018) | 1.008 (.019) | 1.008 (.02) | 1.011 (.02) | .995 (.02) | ,995 (,02) | 1,01 (.18) | 1,006 (,019) | 1,006 (,019) |
| Age\*Sermon | 1.043\* (.022) | 1.045\* (.223) | 1.044\* (.023) | 1.005 (.021) | 1.005 (.021) | 1,005 (,021) | 1,018 (,02) | 1,024 (,021) | 1,024 (,021) |
| Age\*Nudge 1 | 1.023 (.02) | 1.026 (.02) | 1.026 (.021) | 1.017 (.02) | 1.021 (.021) | 1,02 (,021) | 1,017 (,02) | 1,03 (,022) | 1,031 (,022) |
| Age\*Nudge 2 | 1.036 (.021) | 1.039 (.022) | 1.038 (.022) | .098 (.02) | .974 (.019) | ,973 (,02) | 1,012 (,02) | 1,02 (,021) | 1,02 (,021) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gender\*Carrot | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  |
| Gender\*Stick | 1.012 (.306) | .928 (.29) | .928 (.29) | 1.015 (.302) | 1.337 (.418) | 1,355 (,424) | 1,129 (,317) | 1,309 (,385) | 1,314 (,386) |
| Gender\*Sermon | .865 (.283) | .847 (.288) | .828 (.283) | 1.096 (.34) | 1.169 (.372) | 1,179 (,377) | 1,078 (,321) | 1,047 (,322) | 1,044 (,322) |
| Gender\*Nudge 1 | .645 (.198) | .621 (.198) | .622 (.199) | .709 (.215) | .704 (.22) | ,709 (,222) | 1,148 (,356) | 1,003 (,321) | 1,027 (,33) |
| Gender\*Nudge 2 | .444\* (.147) | .436\* (.149) | .426\* (.146) | .773 (.232) | .849 (.263) | ,861 (,267) | ,711 (,219) | ,657 (,21) | .659 (,212) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Inhabitants\*Carrot | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  |
| Inhabitants\*Stick | .996 (.004) | .996 (.004) | .996 (.004) | .988 (.004) | .991\* (.004) | ,991\* (,004) | 1,002 (,003) | 1,002 (,003) | 1,002 (,003) |
| Inhabitants\*Sermon | 1.011 (.006) | 1.012\* (.006) | 1.103\* (.006) | .994 (.003) | .994 (.003) | ,994 (,003) | 1,001 (,003) | 1,001 (,003) | 1 (,003) |
| Inhabitants\*Nudge 1 | 1.006 (.006) | 1.007 (.006) | 1.007 (.006) | .997 (.003) | .997 (.003) | ,997 (,003) | 0,998 (,003) | ,997 (,003) | ,997 (,003) |
| Inhabitants\*Nudge 2 | 1.01 (.006) | 1.011 (.006) | 1.011 (.006) | .991 (.003) | .992\* (.003) | ,992\* (,003) | 1,001 (,003) | 1 (,003) | 1 (,003) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Experience with Nudging\*Carrot | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  | 1 |  |
| Experience with Nudging\*Stick | .906 (.33) | .915 (.335) | .906 (.332) | 1.021 (.375) | .919 (.344) | ,921 (,346) | ,624 (,211) | ,58 (,198) | ,58 (,198) |
| Experience with Nudging\*Sermon | 1.807 (.746) | 1.836 (.767) | 1.766 (.743) | .995 (.357) | .921 (.353) | ,922 (,354) | ,778 (,284) | ,786 (,29) | ,79 (,291) |
| Experience with Nudging\*Nudge 1 | 1.501 (.58) | 1.534 (.595) | 1.151 (.59) | 1.706 (.639) | 1.742 (.66) | 1,732 (,658) | ,845 (,318) | ,863 (,327) | ,875 (,332) |
| Experience with Nudging\*Nudge 2 | 1.709 (.703) | 1.739 (.073) | 1.749 (.704) | 1.229 (.439) | 1.239 (.45) | 1,247 (,545) | ,795 (,295) | ,806 (,303) | ,816 (,308) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| McFadden R^2 | .365 | .368 | .37 | .334 | .346 | .346 | .318 | .327 | .328 |
| χ^2 | 797.53\*\*\* | 804.08\*\*\* | 808.17\*\*\* | 730.96\*\*\* | 756.52\*\*\* | 758.06\*\*\* | 697.9\*\*\* | 718.52\*\*\* | 720.02\*\*\* |

Significance values: \* = .01, \*\* = .001, \*\*\* <.001

**Appendix 4 - Parameter estimates of the rank-ordered logistic regression (Models 3, 6 and 9) (estimates in average marginal effects, standard errors between brackets)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indicators | Policy case | Stick | Carrot | Sermon | Nudge 1 | Nudge 2 |
|  |  | AME | SE | AME | SE | AME | SE | AME | SE | AME | SE |
| Ability | Healthy eating | -.001 | .011 | -.008 | .011 | -.003 | .012 | -.001 | .013 | .013 | .012 |
| Ability | Dog droppings | .001 | .012 | .003 | .012 | .028 | .012 | -.028 | .012 | -.004 | .012 |
| Ability | Speeding in a school zone | -.001 | .012 | -.012 | .011 | .016 | .012 | .002 | .012 | -.005 | .013 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Benevolence | Healthy eating | .02 | .014 | .004 | .014 | .004 | .016 | -.007 | .016 | -.022 | .016 |
| Benevolence | Dog droppings | -.04 | .016 | .019 | .014 | -.003 | .016 | .025 | .016 | -.002 | .016 |
| Benevolence | Speeding in a school zone | -.028 | .015 | .01 | .014 | .004 | .015 | .026 | .016 | -.004 | .016 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Integrity | Healthy eating | .003 | .014 | -.014 | .014 | -.002 | .015 | -.001 | .016 | .014 | .015 |
| Integrity | Dog droppings | -.025 | .015 | .008 | .014 | -.0003 | .015 | .019 | .016 | -.001 | .016 |
| Integrity | Speeding in a school zone | -.032 | .015 | -.007 | .014 | .007 | .015 | .019 | .015 | .013 | .016 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Propensity to trust | Healthy eating | .004 | .012 | .009 | .012 | -.013 | .013 | .015 | .013 | -.015 | .013 |
| Propensity to trust | Dog droppings | -.01 | .013 | .004 | .012 | .003 | .013 | -.008 | .013 | .011 | .013 |
| Propensity to trust | Speeding in a school zone | .001 | .013 | -.006 | .012 | -.01 | .013 | .012 | .013 | .002 | .013 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Age | Healthy eating | -.001 | .002 | -.002 | .002 | .002 | .002 | .0001 | .002 | .001 | .002 |
| Age | Dog droppings | -.0004 | .002 | .0003 | .002 | .001 | .002 | .003 | .002 | -.004 | .002 |
| Age | Speeding in a school zone | -.001 | .002 | -.002 | .002 | .001 | .002 | .002 | .002 | .0001 | .002 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Gender | Healthy eating | .025 | .027 | .034 | .027 | .036 | .028 | -.021 | .029 | -.073 | .028 |
| Gender | Dog droppings | .043 | .027 | .001 | .027 | .03 | .028 | -.052 | .029 | -.023 | .029 |
| Gender | Speeding in a school zone | .043 | .029 | -.005 | .027 | .012 | .029 | .015 | .028 | -.064 | .028 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Inhabitants (\*1000) | Healthy eating | -.001 | .0005 | -.0004 | .0004 | .001 | .0003 | .0001 | .0005 | .001 | .0004 |
| Inhabitants (\*1000) | Dog droppings | -.001 | .0004 | .001 | .0003 | -.0001 | .0003 | .0003 | .0003 | -.0004 | .0003 |
| Inhabitants (\*1000) | Speeding in a school zone | .0002 | .0003 | -.00003 | .0002 | .0001 | .0003 | -.0004 | .0003 | .0001 | .0003 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Experience with nudging | Healthy eating | -.042 | .033 | -.026 | .032 | .03 | .035 | .016 | .035 | .022 | .035 |
| Experience with nudging | Dog droppings | -.028 | .033 | -.017 | .032 | -.036 | .033 | .066 | .035 | .016 | .035 |
| Experience with nudging | Speeding in a school zone | -.051 | .034 | -.036 | .031 | -.001 | .034 | .014 | .034 | .003 | .034 |

**Appendix 5 – List of focus group participants**

|  |  |  |  |
| --- | --- | --- | --- |
| **Participant** | **Position** | **Gender** | **Focus group** |
| Participant 1 | Director | Female | 1 |
| Participant 2 | Staff-member general director | Female | 1 |
| Participant 3 | Staff-member general director | Female | 1 |
| Participant 4 | General director | Female | 1 |
| Participant 5 | Deputy general director | Female | 2 |
| Participant 6 | General director | Male | 2 |
| Participant 7 | General director | Female | 2 |
| Participant 8 | General director | Male | 2 |
| Participant 9 | General director | Male | 2 |
| Participant 10 | General director | Male | 2 |

**Appendix 6 – List of focus group discussion questions**

|  |
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| **Focus group questions** |
| 1 | From an administrative perspective, why would cities, municipalities, and public professionals choose to use behavioral policy instruments (like nudging) to steer citizens’ behaviors, instead of traditional policy instruments like sticks, carrots, and sermons?  |
| 2 | When using behavioral policy instruments, do you assume citizens can be trusted to act appropriately on their own or do you believe citizens cannot be trusted to act appropriately without government intervention? (or: are behavioral policy instruments based on trust or distrust of citizens?) |
| 3 | Do you believe citizens possess the knowledge and practical abilities required of them to act appropriately and what role (if any) does this play in your choice for policy instruments? |
| 4 | Do you believe citizens understand the complexities and nuances of policy making and act with benevolence towards you, and what role (if any) does this play in your choice for policy instruments? |
| 5 | Do you believe citizens act with integrity and are honest and willing to act appropriately, and what role (if any) does this play in your choice for policy instruments? |
| 6 | Finally, which other factors play an important role in your decisions to use one policy instrument over another? |