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The representativeness of the LISS panel

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Motivation

Representativeness is important for reliable conclusions

- All members of the target population have an equal probability to be in the survey
- Even if all households have an equal probability to be approached, the willingness to participate may differ



Motivation

| | Kennisnet | RTL 4 | Elections |
|---------------------|---------------|---------------|---------------|
| <i>Sample size</i> | <i>17,000</i> | <i>10,000</i> | <i>10,000</i> |
| Seats in parliament | | | |
| CDA | 29 | 24 | 44 |
| LPF | 18 | 12 | 8 |
| VVD | 24 | 38 | 28 |
| PvdA | 13 | 41 | 42 |
| SP | 22 | 10 | 9 |
| GL | 26 | 9 | 8 |
| D66 | 4 | 7 | 6 |
| Other | 14 | 9 | 5 |

Source: Jelke Betlehem, Representativity of web surveys – an illusion



Motivation

Representativeness of the LISS panel

- Users of the LISS panel
- CentERdata
- Construction of weights



Contents

- Sample framework
- Representativeness
 - total panel
 - response to individual questionnaires
- Multivariate analysis of response
- Conclusion, further research



LISS: Sample framework

- **Target population: Dutch speaking population in private households**
- Objective: panel of 5,000 households
- Random nationwide sample of 10,600 addresses from population register
- Households approached by letter, next by telephone or in person
- **Household in panel if at least one adult expresses willingness to respond to monthly questionnaire**
- Questionnaires via internet; free PC and internet connection offered if household is not yet on line



Representativeness of the total panel

Comparison

- composition of survey w.r.t known characteristics
- composition Statistics Netherlands

(Problem: survey may still deviate from target population w.r.t. other characteristics)

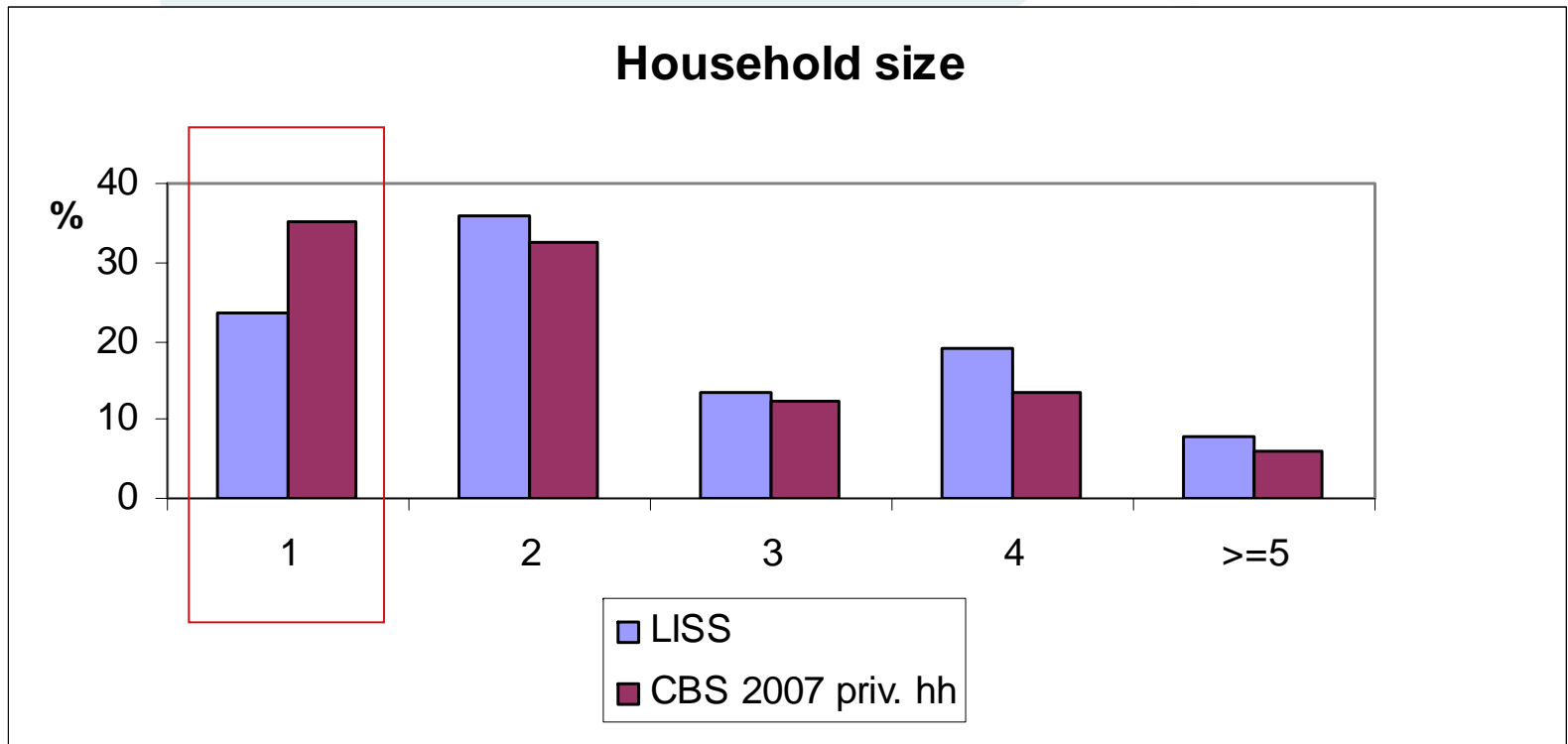


Comparison with national statistics - total panel: age and gender

| Age | LISS | | | CBS 2007 (private households) | | |
|-------|------|--------|-------|-------------------------------|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| | % | % | % | % | % | % |
| <20 | 13.7 | 14.0 | 27.7 | 12.5 | 11.9 | 24.4 |
| 20-39 | 12.1 | 13.1 | 25.1 | 13.3 | 13.2 | 26.6 |
| 40-64 | 19.1 | 19.5 | 38.6 | 17.7 | 17.4 | 35.1 |
| 65-79 | 4.0 | 3.7 | 7.8 | 5.0 | 5.8 | 10.7 |
| 80+ | 0.5 | 0.3 | 0.8 | 1.1 | 2.0 | 3.1 |
| Total | 49.4 | 50.6 | 100.0 | 49.6 | 50.4 | 100.0 |



Comparison with national statistics - total panel: household size





Age and marital status

| Age | Married | Divorced | Widowed | Never m. | Total |
|------------------------------|---------|----------|---------|----------|-------|
| LISS | | | | | |
| <20 | 0.0 | 0.0 | 0.0 | 27.7 | 27.7 |
| 20-39 | 9.9 | 1.0 | 0.0 | 14.2 | 25.1 |
| 40-64 | 29.2 | 4.3 | 0.8 | 4.2 | 38.6 |
| 65-79 | 6.1 | 0.5 | 0.9 | 0.2 | 7.8 |
| 80+ | 0.5 | 0.0 | 0.3 | 0 | 0.8 |
| Total | 45.7 | 5.8 | 2.0 | 46.5 | 100.0 |
| CBS 2007 (population) | | | | | |
| <20 | 0.0 | 0.0 | 0.0 | 24.2 | 24.2 |
| 20-39 | 9.2 | 0.9 | 0.0 | 16.2 | 26.4 |
| 40-64 | 24.8 | 4.3 | 0.9 | 4.9 | 34.9 |
| 65-79 | 7.1 | 0.9 | 2.2 | 0.6 | 10.8 |
| 80+ | 1.2 | 0.2 | 2.1 | 0.2 | 3.7 |
| Total | 42.4 | 6.2 | 5.3 | 46.1 | 100.0 |

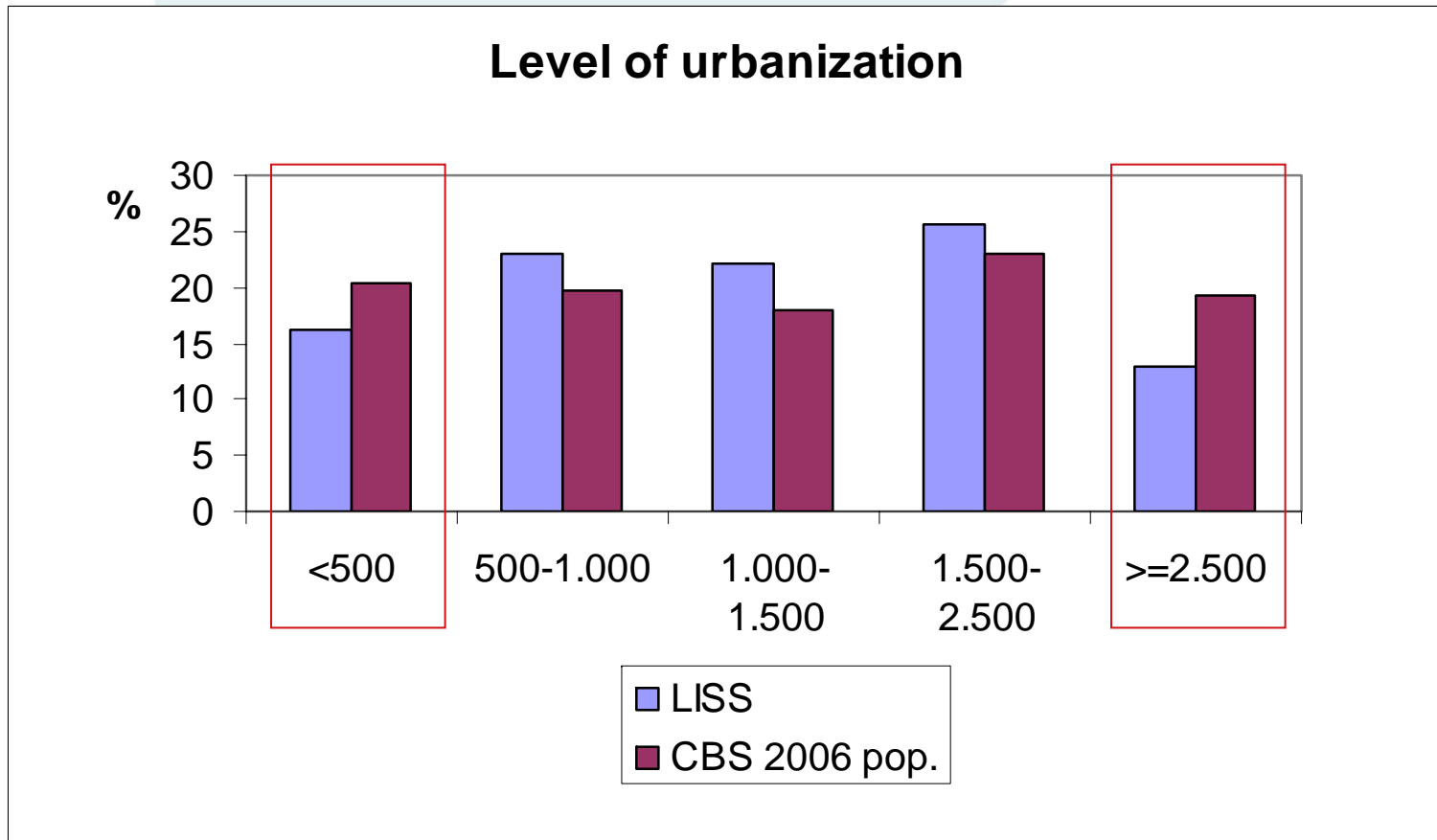


Age and education

| Education/Age | 15- 24 | 25- 34 | 35- 44 | 45- 54 | 55- 65 | Tot. |
|-----------------------|-----------|-----------|-----------|-----------|-----------|------|
| LISS | | | | | | |
| Primary education | 19.3 | 1.9 | 1.9 | 3.6 | 6.8 | 5.8 |
| Sec: VMBO | 29.3 | 14.2 | 21.2 | 31 | 40.5 | 27.2 |
| Sec: HAVO/VWO/MBO | 44.6 | 44 | 41.8 | 33.1 | 23.4 | 36.9 |
| Tertiary: HBO | 5.8 | 27.2 | 25.4 | 23.5 | 21.2 | 21.6 |
| Tertiary: university | 1.0 | 12.7 | 9.7 | 8.8 | 8.1 | 8.5 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| CBS 2006 (population) | | | | | | |
| Primary education | 12.4 | 4.4 | 6.5 | 9.3 | 13.0 | 8.9 |
| Secondary: VMBO | 41.3 | 14.9 | 18.6 | 22 | 27.7 | 24.3 |
| Sec: HAVO/VWO/MBO | 38.6 | 46.5 | 45.7 | 39.8 | 35.4 | 41.4 |
| Tertiary: HBO | 6.4 | 21.1 | 17.2 | 18.3 | 15.4 | 15.9 |
| Tertiary: University | 1.3 | 13.1 | 12 | 10.6 | 8.6 | 9.4 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |



Level of urbanization





Region and age

| Region | North | East | South | West | Total |
|-----------------------|-------|------|-------|------|-------|
| LISS | % | % | % | % | % |
| 0-19 | 3.4 | 6.8 | 5.9 | 11.7 | 27.7 |
| 20-44 | 3.7 | 7.4 | 7.7 | 15.0 | 33.7 |
| 45-64 | 3.3 | 6.6 | 7.7 | 12.4 | 30.0 |
| 65-79 | 0.8 | 1.9 | 1.8 | 3.3 | 7.8 |
| 80+ | 0.1 | 0.1 | 0.2 | 0.4 | 0.8 |
| Total | 11.3 | 22.7 | 23.3 | 42.7 | 100.0 |
| CBS 2008 (population) | | | | | |
| 0-19 | 2.5 | 5.4 | 5.0 | 11.2 | 24.0 |
| 20-44 | 3.4 | 7.1 | 7.0 | 16.4 | 34.0 |
| 45-64 | 2.9 | 5.7 | 6.2 | 12.5 | 27.3 |
| 65-79 | 1.2 | 2.3 | 2.6 | 4.9 | 11.0 |
| 80+ | 0.4 | 0.7 | 0.8 | 1.8 | 3.8 |
| Total | 10.4 | 21.2 | 21.6 | 46.7 | 100.0 |

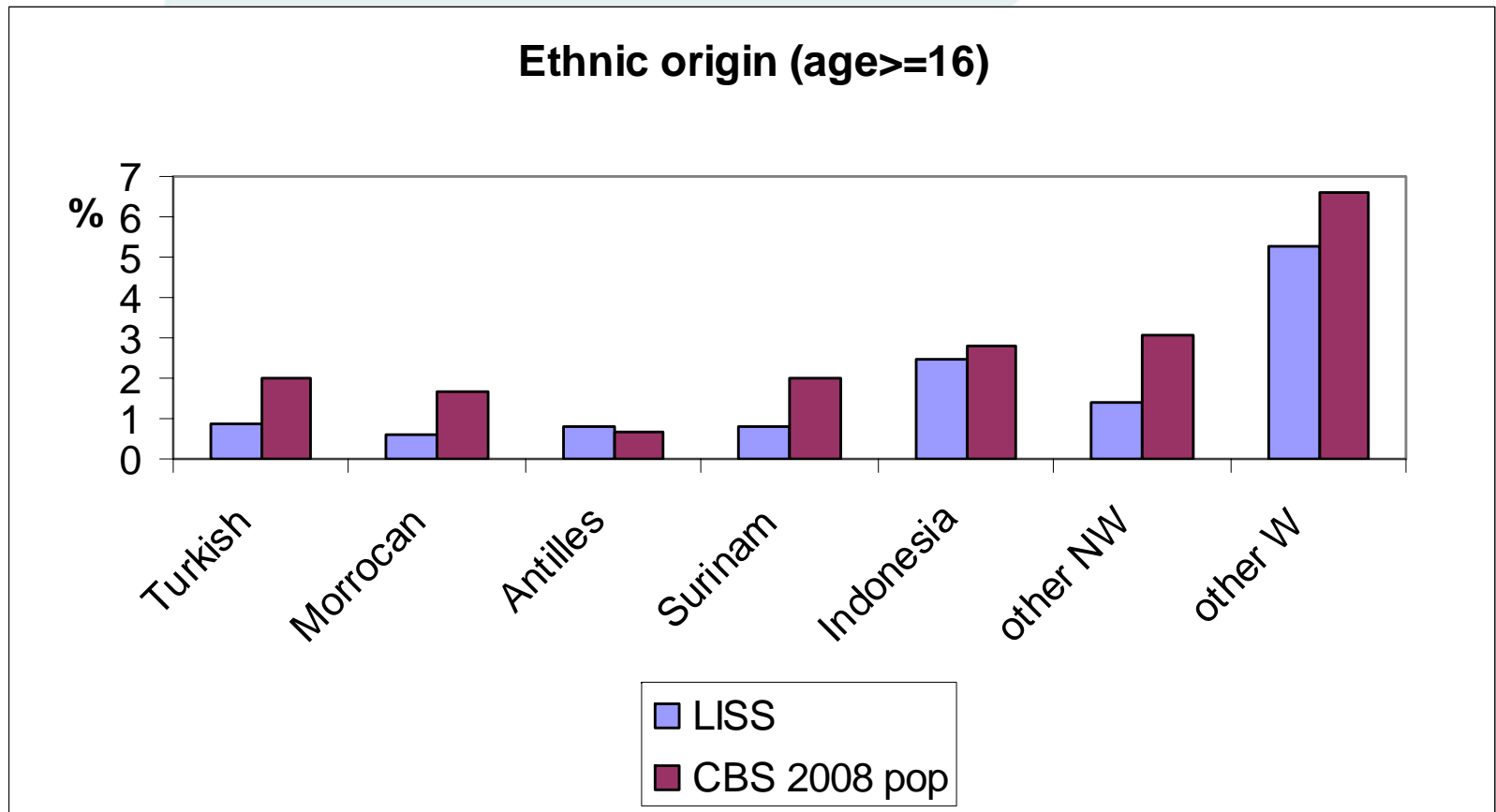


Composition of response to questionnaire on religion and ethnicity (REE): ethnic origin

| Origin, age >=16 | Autochth. | 1st gen. imm. | 2nd gen. imm. | Total |
|------------------------------|-----------|---------------|---------------|-------|
| LISS | | | | |
| Autochthonous | 87.7 | 0.0 | 0.0 | 87.7 |
| Non-western immigrant | 0.0 | 3.3 | 1.2 | 4.5 |
| Western immigrant | 0.0 | 3.0 | 4.8 | 7.8 |
| Total | 87.7 | 6.3 | 6 | 100.0 |
| CBS 2008 (population) | | | | |
| Autochthonous | 81.1 | 0.0 | 0.0 | 81.1 |
| Non-western immigrant | 0.0 | 7.3 | 2.2 | 9.5 |
| Western immigrant | 0.0 | 4.3 | 5.1 | 9.4 |
| Total | 81.1 | 11.5 | 7.4 | 100.0 |



Ethnic origin





Age and ethnicity

| Age | Autochthonous | NW-immigrants | Western immigrants | Total |
|-----------------------|---------------|---------------|--------------------|-------|
| LISS (REE) | | | | |
| 16-19 | 5.4 | 0.5 | 0.5 | 6.3 |
| 20-39 | 25.9 | 2.2 | 2.4 | 30.5 |
| 40-64 | 45.7 | 1.7 | 3.7 | 51.1 |
| 65-79 | 9.8 | 0.1 | 1.2 | 11.1 |
| 80+ | 0.9 | 0.0 | 0.1 | 1.1 |
| Total | 87.7 | 4.5 | 7.8 | 100.0 |
| CBS 2008 (population) | | | | |
| 16-19 | 4.7 | 0.9 | 0.4 | 6.1 |
| 20-39 | 24.2 | 4.8 | 3.1 | 32.2 |
| 40-64 | 36.2 | 3.3 | 4.1 | 43.6 |
| 65-79 | 11.8 | 0.4 | 1.4 | 13.6 |
| 80+ | 4.2 | 0 | 0.4 | 4.6 |
| Total | 81.1 | 9.5 | 9.4 | 100.0 |

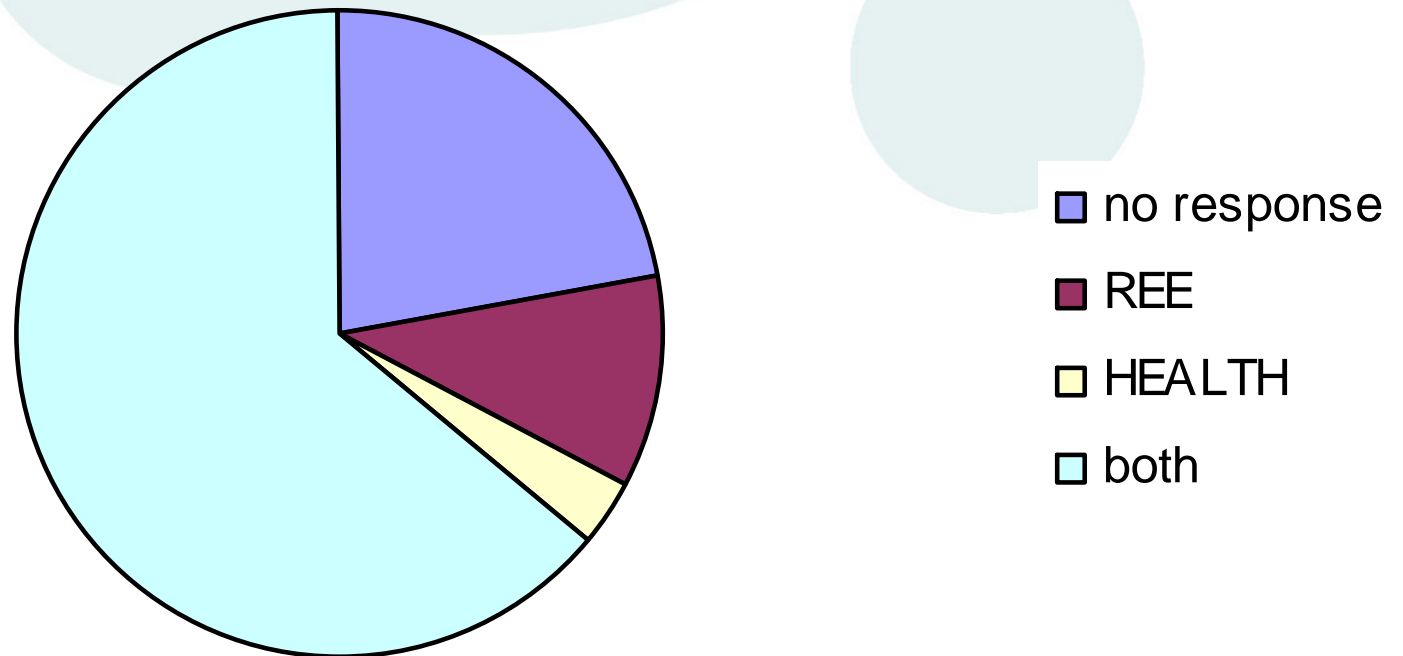


Summary

- Single-person households
- Primary education
- Least and most urbanized areas
- Nonwestern immigrants
(although we should take into account the language problem)



Response to two LISS questionnaires





Age and gender: LISS, REE, HEALTH and CBS

| Age | LISS | | REE | | HEALTH | | CBS 2007 (priv hh) | |
|-------|------|------|------|------|--------|------|-----------------------|------|
| | M | F | M | F | M | F | M | F |
| 16-20 | 3.7 | 3.6 | 3.0 | 3.3 | 2.6 | 2.9 | 3.1 | 3.0 |
| 20-39 | 15.5 | 16.8 | 13.3 | 17.3 | 13.1 | 17.7 | 16.6 | 16.5 |
| 40-64 | 24.5 | 25.0 | 23.6 | 27.4 | 24.1 | 27.7 | 22.0 | 21.7 |
| 65-79 | 5.2 | 4.8 | 5.8 | 5.2 | 5.9 | 5.1 | 6.2 | 7.2 |
| 80+ | 0.6 | 0.4 | 0.6 | 0.4 | 0.6 | 0.3 | 1.4 | 2.5 |
| Total | 49.4 | 50.6 | 46.4 | 53.6 | 46.2 | 53.8 | 49.2 | 50.8 |



Marital status and gender: LISS, REE, HEALTH and CBS

| Marital status | LISS | | REE | | HEALTH | | CBS 2007 (pop.) | |
|----------------|------|------|------|------|--------|------|-----------------|------|
| | M | F | M | F | M | F | M | F |
| Marr. | 29.1 | 29.6 | 28.1 | 31.8 | 28.4 | 32.3 | 26.3 | 26.2 |
| Div. | 3.1 | 4.3 | 3.4 | 4.6 | 3.3 | 4.7 | 3.3 | 4.4 |
| Wid. | 0.7 | 1.9 | 0.8 | 2.2 | 0.8 | 2.1 | 1.3 | 5.3 |
| N. Marr. | 16.5 | 14.8 | 14.1 | 15.0 | 13.7 | 14.7 | 18.2 | 15.0 |
| Total | 49.4 | 50.6 | 46.4 | 53.6 | 46.2 | 53.8 | 49.0 | 51.0 |



Multivariate analysis of response

1. Response of household members
2. Response of participating household members
3. Participation of household members (in households with more than one adult)



Sign. effects in logit analysis of response of hh members 16+

| | REE | HEALTH |
|-----------------------------------|-----|--------|
| Household size | * | |
| Age | * | * |
| Gender | | |
| Age * Gender | * | * |
| Household position | * | * |
| Level of urbanization | | * |
| Homeowner v tenant | * | |
| Does household accounts | * | * |
| Region | * | * |
| Household type | * | * |
| Education | * | * |
| Main activity | * | * |
| Male * working in family business | * | * |

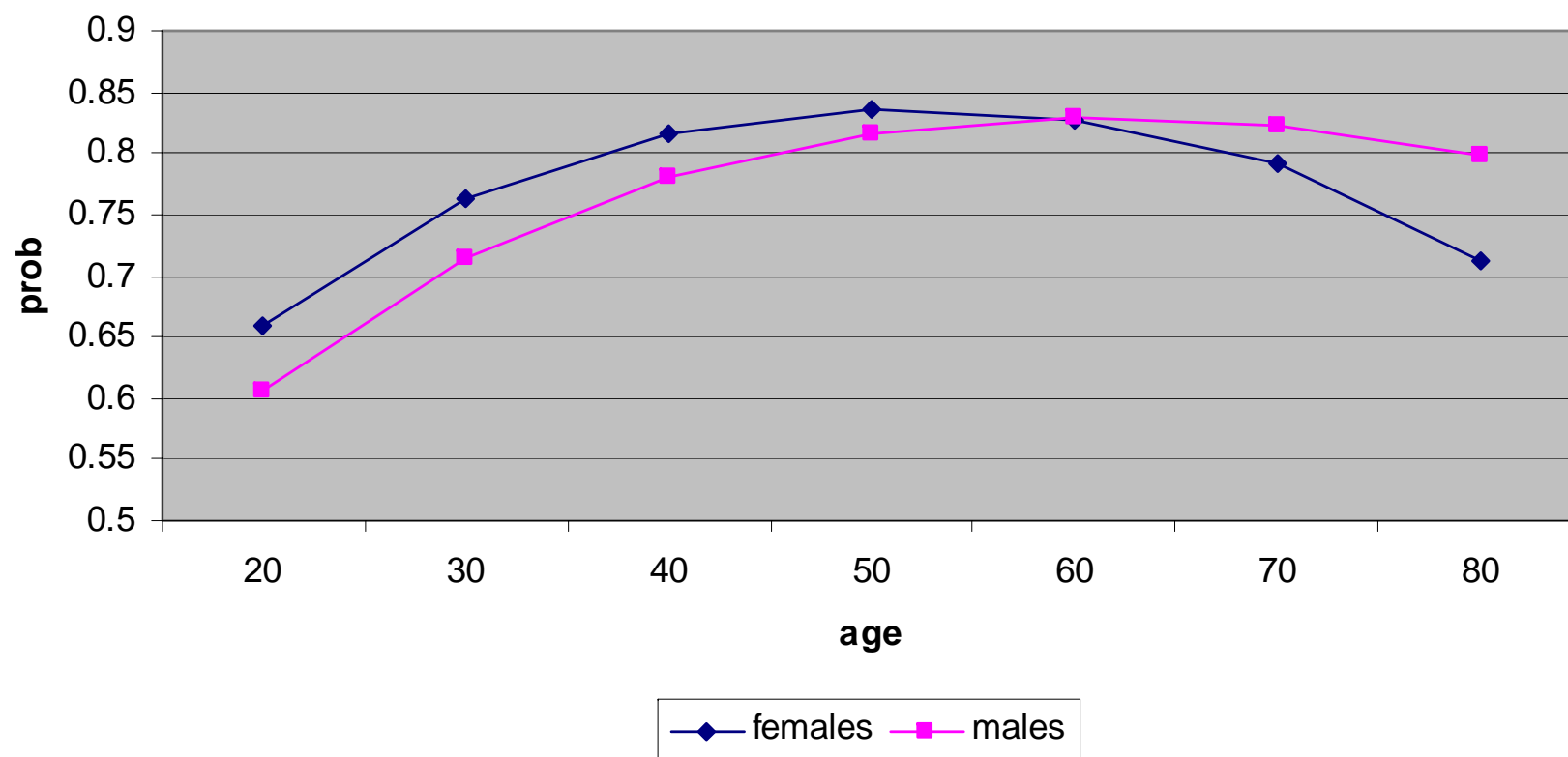


Sign. effects logit analysis response of participating hh members 16+:

| | REE | HEALTH |
|-----------------------------------|-----|--------|
| Household size | * | * |
| Age | * | * |
| Gender | | |
| Age * Gender | * | * |
| Household position | * | * |
| Level of urbanization | | |
| Homeowner v tenant | * | |
| Does household accounts | | |
| Region | | |
| Household type | | |
| Education | * | * |
| Main activity | * | * |
| Male * working in family business | * | |

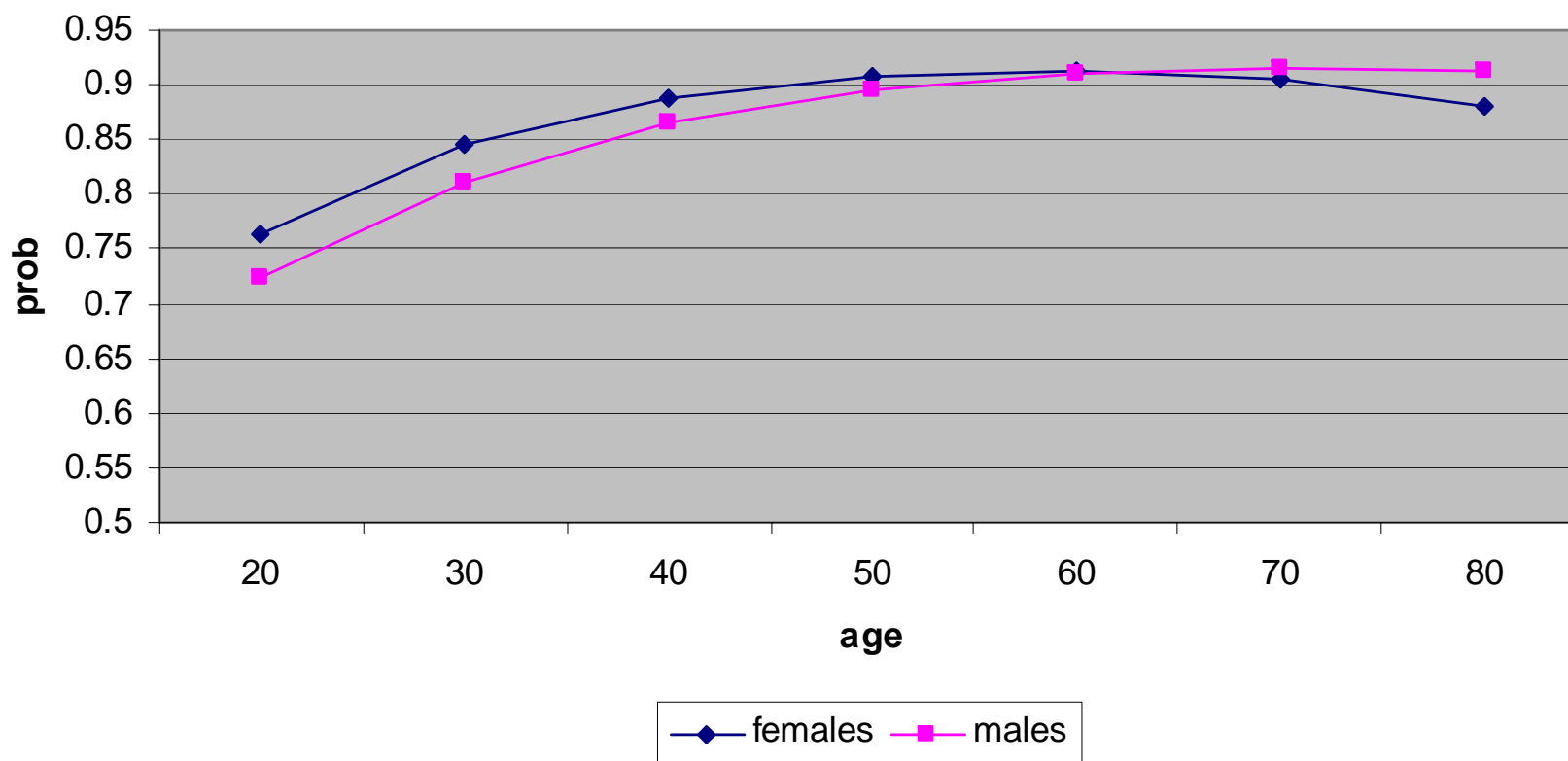


probability of response of participants to HEALTH by age and gender





probability of response of participants to REE by age and gender



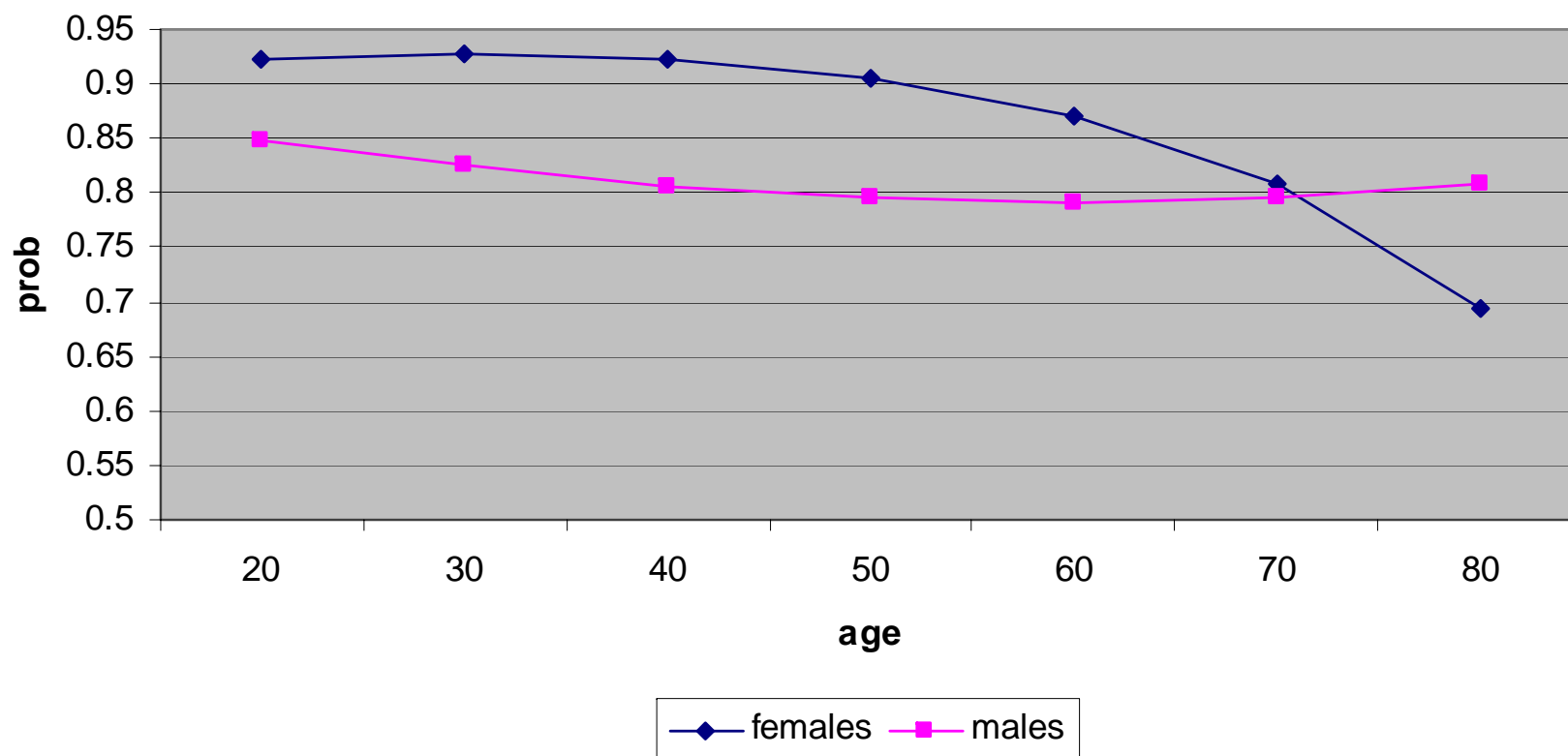


Sign. effects in logit analysis of participation (in hh with > 1 adult)

| | |
|-----------------------------------|---|
| Household size | |
| Age | * |
| Gender | |
| Age * Gender | * |
| Household position | * |
| Level of urbanization | |
| Homeowner v tenant | |
| Does household accounts | * |
| Region | * |
| Household type | * |
| Education | * |
| Main activity | * |
| Male * working in family business | * |



probability of participation (members of hh with more than one adult)





Conclusion

LISS panel differs from household population for some characteristics

Various variables contribute significantly to explain response

Considerable overlap in analysis of response various questionnaires



Further research

More elaborate analysis of response, non-response, attrition over time
- take into account 'response history'

(How to) correct for differences between respondents LISS and population?



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Ethnicity and gender

| Origin, age ≥ 16 | LISS (REE) | | CBS 2008 (population) | |
|-----------------------|------------|--------|--------------------------|--------|
| | male | female | male | female |
| Autochthonous | 40.9 | 46.8 | 39.8 | 41.3 |
| Non-western immigrant | 1.9 | 2.6 | 4.8 | 4.7 |
| Western immigrant | 3.6 | 4.2 | 4.4 | 5.0 |
| Total | 46.4 | 53.6 | 49.0 | 51.0 |
| | | | | |
| Autochthonous | 40.9 | 46.8 | 39.8 | 41.3 |
| 1st gen. immigrant | 2.7 | 3.6 | 5.5 | 6.0 |
| 2nd gen. immigrant | 2.8 | 3.2 | 3.7 | 3.7 |
| Total | 46.4 | 53.6 | 49.0 | 51.0 |