

Economic valuation of effects on health within Health Impact Assessments

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Abstract

Public health experts widely agree that policies, programs and projects from numerous sectors have a decided influence on health determinants, hence the surge of interest in prospective "Health Impact Assessments" (HIA). Likewise, economic considerations currently pose a major challenge throughout the field; health economists developed a range of approaches to calculate (in)direct costs of diseases, treatments etc. The question arises then, if and how can economic valuation of health effects within HIAs take place now or in the future.

To investigate this issue, the Department of Public Health, University Bielefeld, along with the Institute of Public Health North-Rhine Westphalia (loegd), Germany, conducted an email-survey. The answers of 68 participating experts and practitioners from 16 countries and from international organizations showed that so far, only a small fraction of them (7%) have conducted economic valuations; more than one third (37%), however, at least sometimes discusses this option. The main obstacles seem to be: lack of knowledge about methodological details, existing uncertainties, and various problems in defining economic value for effects on health. Cost-benefit, cost-effectiveness, and cost-utility analysis were nominated most frequently as candidate methods. Participants also provided nearly 300 commentaries concerning potentials and/or risks that these economic valuations might have.

This paper is mostly about the basic and quantitative results from the survey; it is planned to publish the qualitative results (with detailed discussion of the range of arguments "pro" and "con") in a separate paper.

Key Words: Health Impact Assessment, economic valuation, Cost-benefit analysis, E-mail survey

Introduction

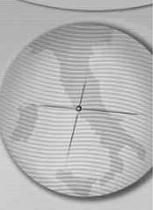
Many societal sectors ranging, for example, from housing, transport and agriculture to education and economy, influence the health of populations, by either "promoting" it or setting it at risk. [1, 2] Therefore, Public Health experts now widely agree that policies, programs and projects of societal sectors, wherever they can influence health determinants, deserve close examination beforehand in order to optimize health gains and minimize health risks. Correspondingly, we observe a surge of interest in prospective "Health Impact Assessments" (HIA). [3-5]

Likewise, economic considerations currently pose a major challenge throughout the field. Health economists developed a range of approaches to calculate and compare (in)direct costs of diseases, treatments etc. by using a form of economic evaluation such as cost-benefit analysis, cost-effectiveness analysis or cost-utility analysis. [6- 9] While up to now these forms, with their methodological features, are mainly used to estimate the direct and sometimes indirect costs of different health care interventions, the questions

come up, if and how economic valuation of health effects can be adopted to HIAs, if it already takes place, or could and/or should in the future. Besides, HIA studies can be time and resource consuming exercises [10]. The question of HIA efficiency, however, is not investigated in this paper.

To study the issue of economic valuation within HIA, the Department of Public Health, University of Bielefeld, and the Institute of Public Health (loegd) North-Rhine Westphalia, Germany, together designed and conducted an email-survey. The study aims were to investigate the current practice of economic evaluations within HIAs. In particular, answers were sought for the following research questions:

- Are economic valuation methods nowadays discussed and conducted within HIAs?
- Which methods are mainly used by the HIA community, respectively which would be used?
- Where are the main problems seen in conducting economic valuation within HIAs?
- What are the potential prospects and risks of conducting economic valuations in the opinion of the HIA experts?



Methods

The survey was designed as a questionnaire survey which was sent to HIA experts by email. To establish an initial set of HIA experts, we selected three recent HIA sources which were seen as representative of current HIA developments either in Germany or internationally. These sources are: an HIA theme issue of the Bulletin of the WHO [11], the HIA book edited by Kemm, Parry and Palmer [4], and the HIA workshop report of the Institute of Public Health (Ioegd) NRW [12]. The initial set of HIA experts consisted of the contributors to these three sources. In order to reach a larger number of HIA experts by a “snowballing” system, we included a question concerning further contacts. Subsequently, all persons nominated by the primary panel were also invited to participate.

The survey essentially consisted of three fixed-alternative questions regarding the experts experience with economic valuation within HIAs, how economic valuations within HIA are discussed, and if such valuations are being planned to be conducted in future HIAs. We also invited commentaries and included three open questions concerning methods used (or planned to be used) as well as potential future prospects and risks in integrating economic valuation of effects on health within HIAs (Figure 1).

The survey was conducted in July and August 2006. At first we identified the email addresses of “initial contacts” to whom we sent a cover letter describing the survey project and the survey document. The survey was meant to be filled in directly at the computer. We asked that they send back the completed form by email within three weeks. One week before the end of this period we sent a reminder email to all experts who had not yet responded. During the same time period we sent the survey to new contacts (“snowballed contacts”) whose names were given to us by participating experts. Some experts also forwarded the survey to other colleagues.

All data thus obtained were transferred into MS-Excel for further data analysis. The closed-ended questions were coded using a predetermined coding-scheme, while the commentaries were analysed following Mayring’s “qualitative content-analysis” [13] and coded according to the “text-sorting technique” introduced by Beywl & Schepp-Winter [14]. Thus it was possible to generate different topic based categories which allowed for the analysis of the frequency of similar statements.

Results

The set of “initial contacts” consisted of 102 persons. With 60 recipients added by “snowballing”,

Figure 1. Questionnaire

Survey: Economic valuation of effects on health within 'Health Impact Assessments' (HIA)	
1. Have you ever implemented economic valuations of supposed effects on health while conducting a HIA? <input type="checkbox"/> yes <input type="checkbox"/> no If yes: Please name the project and the economic valuation methods used:	
2. Is economic valuation of effects on health for you a subject of discussion while conducting HIAs? <input type="checkbox"/> always <input type="checkbox"/> sometimes <input type="checkbox"/> up to now not Please give a short commentary on your statement.	
3. Are you thinking of performing economic valuations within your future HIAs? <input type="checkbox"/> yes <input type="checkbox"/> no If yes: Which methods would you use?	
4. In your opinion, which potential future prospects do you observe in integrating economic valuations of effects on health into HIAs?	
5. In your opinion, which potential risks do you observe in integrating economic valuations of effects on health into HIAs?	
6. Could you name other researchers conducting economic valuations within HIAs, who could be asked to take part in this survey? If yes, and provided that this person agrees, please write down her/his name, and e-mail address	
I agree on my statements being used anonymously for the analysis and possible publications.	
Name:	
Position:	
Organization/Company:	
Your assigned task with HIAs:	
<input type="checkbox"/> HIA practitioner	<input type="checkbox"/> HIA decision maker <input type="checkbox"/> HIA User <input type="checkbox"/> HIA Researcher



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our questionnaire was sent out to 162 persons, including international HIA experts and Public Health officers. A group of 13 recipients (8 %) were affiliated with international organisations, e.g. World Bank, WHO, and the European Commission. The other 149 recipients were working for universities, consulting firms, or public health institutions in 26 countries (Europe = 128 recipients, overseas = 21 recipients).

A total of 68 persons (42%) from 16 countries and from international organizations responded to the survey. The fraction of respondents was particularly high in Germany (71% of them “snowballed” contacts), and low among those affiliated with international organizations (15%). The high response rate in Germany is due to the support of the public health department of Baden-Wuerttemberg, which asked affiliated local health authorities to participate in our survey. In total we received 36 responses from Germany, 24 responses from other European countries, 6 responses from outside Europe and 2 responses from International Organisations. An overview of response status by contact type (initial, snowballed) and country group is given in table 1.

Concerning their relationship with HIA, most responders regarded themselves as HIA practitioners (48%) or HIA researchers (39%), much less often as HIA decision-makers (7%) or HIA users (6%). Several respondents indicated more than one function; the relationship of multiple answers is shown in figure 2. In absolute numbers, the largest overlap was between “HIA researchers” and “HIA practitioners”. With 33

“practitioner” and 27 “researcher” nominations, 8 persons indicated membership in both groups.

Question 1 of the questionnaire asked about having ever implemented economic valuations of supposed effects on health while conducting a HIA. Among the 67 respondents with valid answers to this item, 62 indicated “no”. As for methods used, the other five respondents (7% of 67) – the “early adopters” – gave a total of 20 nominations, with cost-benefit analysis (12 nominations) far ahead of other methods (Table 2, left-hand column). Cost-utility analysis and Socio-economic analysis received two nominations each.

Asked if economic valuation of effects on health is a subject of discussion while conducting their HIAs, 28 respondents (43% of 65 with valid answers) said “sometimes” (k = 9) or “always” (k = 19). Thirty-eight respondents (58% of 66 with valid answers) indicated they were thinking of

Figure 2. HIA role of survey respondents (k = 55, providing 89 nominations)

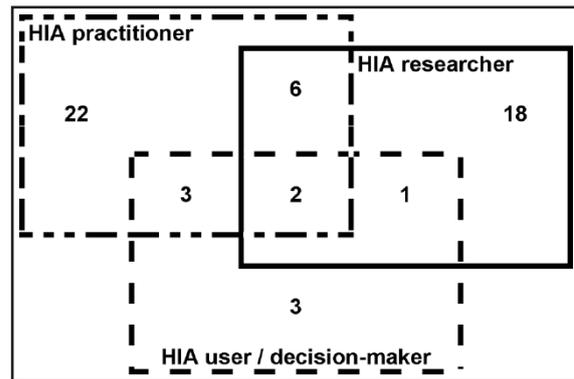
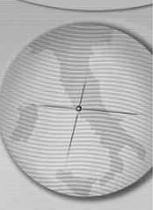


Table 1. Response status by contact type (initial, snowballed) and country group (absolute numbers, row and column %)

abs	row% col%	Germany	Other European	Outside of Europe	International organizations	Row total	col%
Initial contacts		13	64	14	11	102	100,0%
		12,7%	62,7%	13,7%	10,8%		63,0%
		25,5%	83,1%	66,7%	84,6%		
<i>Respondents</i>		7	18	5	2	32	100,0%
		21,9%	56,3%	15,6%	6,3%		19,8%
		13,7%	23,4%	23,8%	15,4%		
<i>Non-respondents</i>		6	46	9	9	70	100,0%
		8,6%	65,7%	12,9%	12,9%		43,2%
		11,8%	59,7%	42,9%	69,2%		
Snowballed contacts		38	13	7	2	60	100,0%
		63,3%	21,7%	11,7%	3,3%		37,0%
		74,5%	16,9%	33,3%	15,4%		
<i>Respondents</i>		29	6	1	0	36	100,0%
		80,6%	16,7%	2,8%	0,0%		22,2%
		56,9%	7,8%	4,8%	0,0%		
<i>Non-respondents</i>		9	7	6	2	24	100,0%
		37,5%	29,2%	25,0%	8,3%		14,8%
		17,6%	9,1%	28,6%	15,4%		
Respondents		36	24	6	2	68	100,0%
		52,9%	35,3%	8,8%	2,9%		42,0%
		70,6%	31,2%	28,6%	15,4%		
<i>Non-respondents</i>		15	53	15	11	94	100,0%
		16,0%	56,4%	16,0%	11,7%		58,0%
		29,4%	68,8%	71,4%	84,6%		
Column total	row%	51	77	21	13	162	100,0%
		31,5%	47,5%	13,0%	8,0%		100,0%
		100,0%	100,0%	100,0%	100,0%		



performing economic valuations within future HIAs. Among the methods to be used, cost-benefit analysis again led the ranking list (10 of 33 nominations), now closely followed by cost-effectiveness (7 nominations) (Table 2, right-hand column). Cost-utility analysis and “Cost of illness” received four nominations each.

As a next step, we cross-tabulated current experience and existing discussion with future intentions concerning economic valuation (Table 3). This demonstrated that 31 respondents (= 48% of 65 with valid answers) to-date were not currently considering economic valuation, i.e. these respondents neither implemented economic valuation so far, nor plan to do so, nor discuss the issue in their HIAs, up to now. On the other hand, 28 respondents (including the 5 who already did it) intend to implement economic valuation in the future with an addition 6 more

respondents sometimes discussing the issue in their HIAs. Thus, a total of 34 respondents (= 52% of 65 with valid answers) is either already involved in economic valuation in HIA, or at least acknowledges the issue’s relevance by intending or discussing implementation. Thus, in this sample, the group of “adopters / aspirants” (k = 34) is slightly larger than the group of “non-aspirants” (k = 31).

Questions 4 and 5 of the questionnaire asked about potential future prospects and risks associated with integrating economic valuations of health effects into HIA. In answering these questions, nearly 300 commentaries were given. We counted the number of “prospects” and “risks” as “pros” and “cons” of economic valuation in HIA, per participant. There were up to 99 “pros” (34% of the commentaries given by 58 respondents) and up to 193 “cons” (66% given by 57

Table 2. Nominations of economic valuation methods “used” and “to be used” in HIAs (Methods ordered by frequency of nomination)

abs	Used	row% col%	To be used	row% col%	Row total	row% col%
Cost-benefit	12	55% 60%	10	45% 30%	22	100% 42%
Cost-effectiveness	0	0% 0%	7	100% 21%	7	100% 13%
Cost utility	2	33% 10%	4	67% 12%	6	100% 11%
Cost of illness	1	20% 5%	4	80% 12%	5	100% 9%
Socio economic analysis	2	50% 10%	2	50% 6%	4	100% 8%
Other / not yet known	3	33% 15%	6	67% 18%	9	100% 17%
Column total	20	38% 100%	33	62% 100%	53	100% 100%

Table 3. Implementation of economic valuation and intention for future HIAs (absolute numbers, row and column %)

abs	row% col%	Intention (future HIAs)		Row total	col%
		Yes	No		
Ever implemented?					
Yes		5	100% 18%	0	0% 0%
No		23	38% 82%	38	62% 100%
Subject of discussion	always	7	100% 25%	0	0% 0%
	sometimes	10	63% 36%	6	38% 16%
	up to now not	6	16% 21%	31	84% 82%
	missing	0	0% 0%	1	100% 3%
Column total	row%	28	42% 100%	38	58% 100%



respondents). The main advantages in conducting economic valuations were seen in given additional arguments to aid decision-makers in the planning process of projects, programs or policies (54% of the “pro”-commentaries). The main obstacles seem to be: lack of knowledge about methodological details (20% of the “con”-commentaries), existing uncertainties, and various problems in defining economic value for effects on health (19%), as well as problems in interpreting the results as these depend on too many things, like methods used, data included, experience of the researcher or the decision maker (17%). Another risk was seen in the domination of the estimated monetary values while other important health effects, that can not easily be valued in monetary terms, might be not considered in the decisions (16%).

For every participant, we then compared the number of “pros” with the number of “cons”. If the number of “cons” was smaller than or equal to the number of “pros”, we assigned the participant to the group “Pros at least balanced”. The other persons, with “cons” exceeding the “pros”, were labelled “Cons in majority”.

The fraction of participants in the group “Pros at least balanced” was larger (3 out of 5) among those who already implemented economic valuation than among those who did not (fraction “balanced” = 17% of 52); larger among those who discuss economic valuation always (fraction “balanced” = 3 out of 9) or sometimes (fraction “balanced” = 21%

of 19) than among those who up to now do not discuss it (fraction “balanced” = 18% of 28); and larger among those who plan such valuations (fraction “balanced” = 29% of 28) than among those who do not (fraction “balanced” = 14% of 28).

Recognizing the crucial role of discussing economic valuation in HIAs, we summarize our results concerning this item for several subgroups in figure 3. As the figure shows, more than one third of the contacts (37%) were established via snowballing, and with 60% compared to 31%, the response rate was higher in this “snowballed” group. As indicated earlier, the number of participants having implemented economic valuation is small ($k = 5$), with 1 of these persons belonging to the snowballed group. 24 participants, however, are discussing economic valuation in HIA, this fraction being particularly high in the initial group with 22 contacts out of 33 and 6 out of 35 in the “snowballed” group.

Discussion

Both the prospective assessment of policies, programs and projects in societal sectors and new approaches to calculate costs of disease are public health fields in rapid development. This survey aimed to investigate the question if and how economic valuation of health effects within HIAs already takes place, or could and/or should in the future.

For this purpose, we conducted the email survey described above. The following aspects

Table 4. Economic valuation by “attitude” (absolute numbers, row and column %)

abs	row% col%	# Pro's >= # Con's		# Pro's < # Con's		Row total	
Economic valuations implemented	<i>Yes</i>	3	60%	2	40%	5	100%
	<i>No</i>	9	17%	43	83%	52	100%
Column total		12	21%	45	79%	57	100%
Economic valuations discussed	<i>Always</i>	3	33%	6	67%	9	100%
	<i>Sometimes</i>	4	21%	15	79%	19	100%
	<i>Up to now not</i>	5	18%	23	82%	28	100%
Column total		12	21%	44	79%	56	100%
Economic valuations planned	<i>Yes</i>	8	29%	20	71%	28	100%
	<i>No</i>	4	14%	24	86%	28	100%
Column total		12	21%	44	79%	56	100%

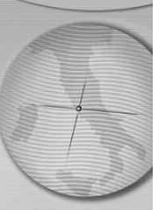
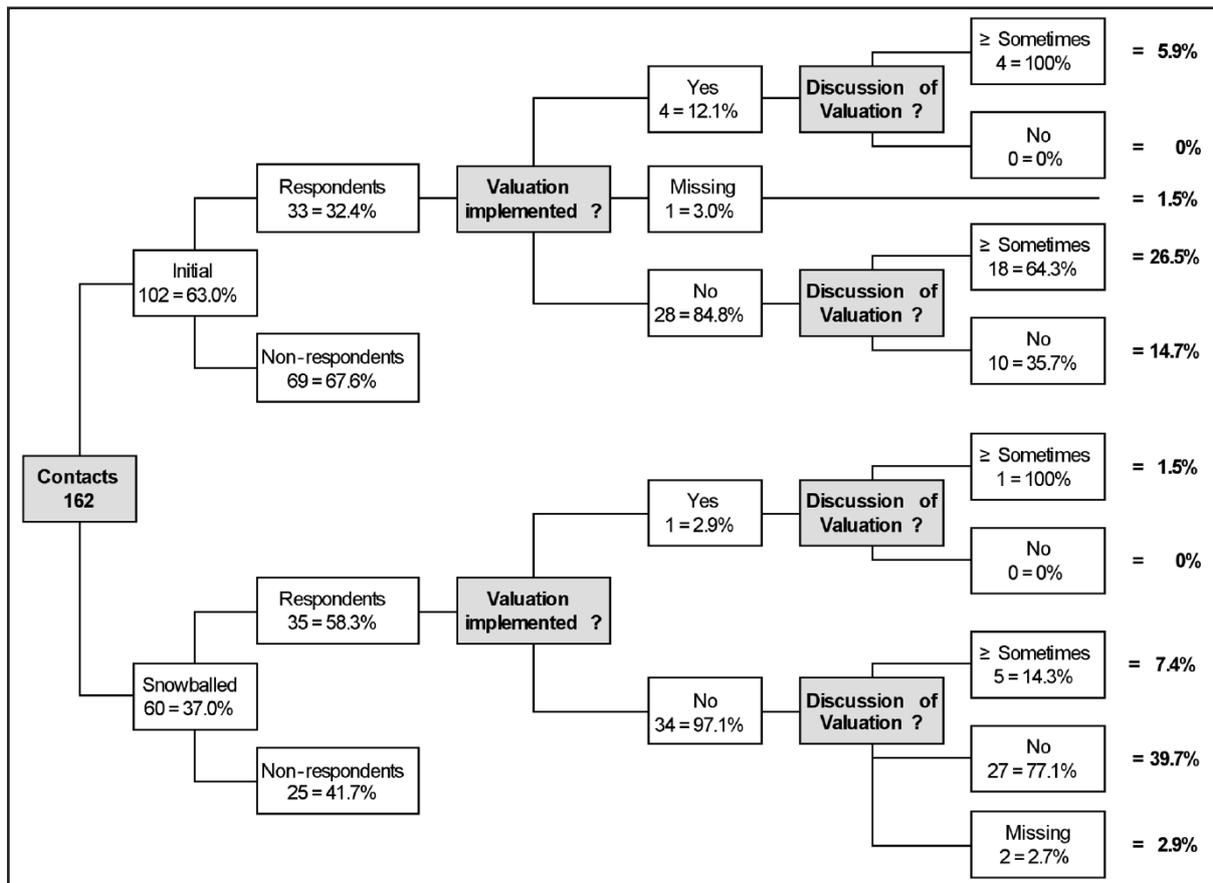


Figure 3. Valuation discussion status, by sampling fraction and valuation implementation



seem to deserve special attention: (1) the sample, (2) the response rate, (3) the fractions “missing” among the answers received and the consistency and plausibility of the answers, and finally (4): what follows from the results.

(1) The sample: No complete list of HIA professionals / researchers / practitioners from which to sample was available to us, neither internationally nor for Germany. As a substitute, we sampled in a 2-step procedure. As a first step, we selected two international and one German source to create a mailing list. The sources were: the one “significant” book on HIA in English, a journal “theme” issue in a recognized Public Health journal, and for Germany, the report of the only large-scale national HIA meeting so far; the persons contributing to these three sources were entered on the mailing list. Obviously, the list is bound to contain persons which are only casually affiliated with HIA (false positives) and will also have missed persons who could reasonably have been included (false negatives). These limitations were regarded as acceptable for the purpose of this study. In a second step (“snowballing”), persons were added to the mailing list who were nominated by respondents from the first wave. On one hand, persons known to be interested in

economic valuation in HIA probably had a higher chance to be nominated by their colleagues (selection bias). On the other hand, a large fraction of “snowballed” persons were Public Health practitioners from a German state (Bundesland), with no selection applied. We therefore regard the bias in the “snowballed” fraction of respondents as limited and acceptable.

(2) The response rate: For both subsets (primary list, and snowballed), persons interested in economic valuation in HIA may have been more inclined to participate in the survey (response bias), for this reason, the fractions of involvement, intention etc. are likely to be overestimated. To illustrate this potential effect, we offer the following crude estimate. If all non-respondents of both subsets were completely “abstinent” from practice, intention, and discussion of economic valuation in HIA, the estimates would be as follows: experiences: 5 of 162 = 3.1% instead of 5 of 68 = 7.4%; intention to conduct economic valuations: 38 of 162 = 32% instead of 38 of 68 = 56%; at least sometimes discussing to conduct economic valuations: 28 of 162 = 18% instead of 28 of 68 = 41%.

(3) The answers: the fractions of “missing” answers are small, ranging from 1 for the questions 1 (implementation) and 2 (discussing) to 13 for the



assigned task with HIAs. There were difficulties, however, with the two questions on “prospects” and “risks” of economic valuation in HIA. A considerable fraction of the respondents did not comply with the given structure but offered “pros” and “cons” in a more free-style way. Therefore coding and analysis were adjusted by reallocating the commentaries to “pro” or “con” fractions by interpreting their meaning. As for consistency and plausibility of the answers: It cannot always be assumed that respondents understand the instructions and/or all the questions correctly. We therefore decided to check if the “pros” and “cons” and the derived indicator “Pros at least balanced” are plausibly distributed among those without / with experience, intention, discussion. The distributions observed seemed quite plausible and, in our opinion, did not raise doubts about the credibility of the answers.

(4) What follows from the results presented in this paper?

1. So far, economic valuation seems to be the rare exception. Only 5 out of 66 respondents indicated that they already included economic valuations in HIA. Given the nature of the survey (including the “snowballing” component), this fraction of nearly 7% is probably too high an estimate for overall prevalence of this experience. It should be noted, however, that this estimate could also be too low - e.g., if economic valuations come under different headings than those used in the survey (socio economic analysis, contingent valuation), and respondents did not, by themselves, associate these other activities with what was asked in the survey. On the other hand one has to consider that especially in the environmental sector many impact assessments are conducted that include economic valuations, that also may estimate the relevant costs on effects on health e.g. for a health care systems [15, 16], but are not considered as Health Impact Assessment.

2. The interest in economic valuations within HIA (indicated by “discussions held”) and the intention to conduct such valuations in the future, as expressed by respondents, is much higher than the current level of experience. Again, this could be overestimated, but the survey established at least the existence of a group of “aspirants” which significantly outnumber the group of current “doers”.

3. For “pros” and “cons”, we received numerous nominations from all groups (doers, aspirants, and non-aspirants). It is remarkable that there was no clear-cut separation between the groups. Almost every respondent provided both “pro” and “con”

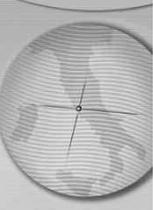
arguments. This means that the HIA profession (as far as represented in this survey) carefully weighs the issue of economic valuation and seems to develop “fine-tuned” opinions rather than “black-and-white” ones.

Based on these results, what may we expect for the future? It seems likely we will observe a growing number of “trial” economic valuations in HIA, and probably an extended debate on the merits and risks of such valuations. Given the nature of responses received in this survey, we may anticipate the debate will be adequately sophisticated, and avoid over-simplifications.

This paper is mostly about the basic and quantitative results from the survey; it is planned to publish the qualitative results (with detailed discussion of the range of arguments “pro” and “con”) in a separate paper [see also 17].

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