STATE OF CALIFORNIA
DEPARTMENT OF MOTOR VEHICLES

EVALUATION OF THE REDESIGNED DL 44 DRIVER LICENSE APPLICATION FORM

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SUMMARY

Introduction

- The purpose of this study was to evaluate the redesigned DL 44 (Rev. 6/97) driver license application form. The Business Process Reengineering team revised the DL 44 to make it more user friendly, simplify the form's language, and remove redundant or unneeded information. One of the changes was to combine the two vision and physical/mental (P/M) condition questions into a single question on the revised DL 44. The purpose of the current study was to assess whether the percentage of applicants self-reporting P/M conditions that could affect their ability to drive safely was reduced by combining the vision disorder and P/M condition questions into one question on the redesigned form.

- This study did not investigate the testing, referral, or restrictive processes which occurred as a result of the applicants' self-reporting of vision and P/M conditions to the department.

- The results are based on DL 44 forms and counts of total DL 44 activity collected from all Grade III, IV, and V field offices from August 11th to August 30th, 1997, and between September 17th and October 8th, 1997.

Results

- The majority of the field offices reported inadequate data, or did not report any data at all during the study. Data were only used from field offices that reported for at least 4 days in each of the pre and post survey periods.

- The percentage of applicants self-reporting a P/M condition during the pre and post survey periods was calculated as a raw percentage and also as a weighted percentage. The purpose of the weighted percentage was to simulate what the "yes" percentage would have been had the field offices reported usable data every day of the survey and the same volume of DL 44 activity in both survey periods.

- Because some older DL 44 forms in the pre-redesign survey period also had a separate question pertaining to the applicants' drug and alcohol use, the number of applicants who self-reported that they were habitual users of drugs/alcohol was

greater in the pre period (24 cases) than in the post period (3 cases). It was therefore decided to compute the weighted and unweighted percentages both with and without these drug/alcohol cases.

The weighted and unweighted percentages of applicants self-reporting a vision or other P/M disorder, both with and without drug/alcohol cases, are shown in Table 1.

Table 1

Unweighted and Weighted Percentages of Vision or other P/M Applications Before and After the DL 44 Redesign and With and Without Drug/Alcohol Cases Included

Period	% of Vision and P/M Applications	
	Unweighted	Weighted
	Including Drug/Alcohol Cases	
Pre	0.30	0.32
Post	0.22[a]	0.22[b]
	Excluding Drug/Alcohol Cases	
Pre	0.27	0.27
Post	0.21[c]	0.21[d]

Note. Weighted percentages were calculated to simulate what the percentages would have been had the field offices reported usable data for each day of the pre and post evaluation periods and the same volume of DL 44 activity in both survey periods. [a]χ^2 (1) = 4.17, $p < .05$. [b]χ^2 (1) = 5.90, $p < .05$. [c]χ^2 (1) = 2.02, $p = .17$. [d]χ^2 (1) = 2.02, $p = .17$.

- There is a trend suggesting that the changes in the DL 44 format resulted in a 22% reduction in the percentage of applicants self-reporting a vision or other P/M disorder. Although the reduction did not reach conventional levels of statistical significance ($p < .05$), this fact must be qualified by the low statistical power and small sample size of the study. We therefore can neither reject nor confirm the possibility that the changes in the format reduced the proportion of applicants self-reporting vision or other P/M disorders. However, the obtained results are nonetheless more consistent with a moderate reduction in the percentage of identified problem cases than with the hypothesis of no effect.

- The elimination of the separate question relating to drug and alcohol use on the 12/96 revision of the DL 44 combined with the effects of the current changes to the DL 44 resulted in a significant ($p < .05$) 31% reduction in the total percentage of applicants self-reporting P/M disorders to the department. This represents 3,400 fewer problem cases each year, of which 1,400 are alcohol/drug cases. Because only some of the offices in the pre period used the older form with the separate drug/alcohol question, the true magnitude of this effect is probably underestimated by these data.

- The underreporting of data by the majority (62%) of the field offices limits the confidence that can be placed on the generality of the study findings.

Recommendations

- The department should consider reinstating a stand-alone question on the DL 44 regarding whether the applicant is a habitual drug/alcohol user if this information is deemed to be of sufficient value to the department.

- No recommendations can be made concerning the other aspects of the format change due to the above mentioned limitations. However, if the department wishes to exercise caution and err on the side of safety, it may want to consider further revising the questions on the form to recapture the "lost" P/M cases.

INTRODUCTION

This report presents the results of an evaluation of the redesigned DL 44 (Rev. 6/97) application form. Of particular interest was whether combining the vision disorder and physical/mental (P/M) condition questions into one question on a redesigned DL 44 form would result in a reduction in the percentage of applicants who self-reported vision disorders and P/M conditions to the department.

The Business Process Reengineering (BPR) team initiated the revision of the DL 44 form in April 1997. The team's goals were to make the form more user friendly for customers and DMV personnel, to simplify the form's language, and to remove redundant or unneeded information captured by the form. For instance, the DL 44 (Rev. 12/96) has two questions regarding whether the applicant has a P/M condition that could affect his or her ability to operate a motor vehicle. One question pertained to lapses of consciousness, mental conditions, diseases, disorders, disabilities or addictions. The other question pertained strictly to vision disorders. For both of these questions, the applicant was asked to check either "yes" or "no." If the applicant answered "yes," a brief explanation of the condition was required. On the redesigned DL 44 (Rev. 6/97), both of the vision and P/M questions were combined into a single, more general question. This question asks whether the applicant has any health or vision problems that could affect his or her ability to drive safely. If the applicant checks "yes," he/she is required to write a brief explanation.

METHOD

To determine the baseline percentage of "yes" responses to the vision and P/M questions on the original DL 44 (Rev. 12/96), all Grade III, IV, and V field offices were instructed by the BPR team to send to R&D copies of all DL 44s processed by their office with "yes" answers to either the vision and/or P/M question(s) between August 11, 1997 and August 30, 1997. The field offices were also instructed to send a daily count of the total number of DL 44s processed by their office that were forwarded to Micrographics. During this pre-redesign survey period, a total of 1,146 copies of DL 44 forms and 679 submissions of total form counts were collected and sent to R&D. The DL 44 forms collected during this period unexpectedly included two different revisions of the DL 44 (Revs. 12/95 & 12/96). The primary difference between the two revisions was that the earlier 12/95 revision had a separate question asking whether the applicant habitually used drugs or alcohol, whereas the 12/96 revision had this information

integrated into the phrasing of the P/M question. For the purposes of this evaluation, any "yes" response to the drug/alcohol habitual use question on the 12/95 form was treated as a "yes" response to the P/M question with the reason being drug/alcohol addiction.

The redesigned DL 44 (Rev. 6/97) application was distributed to all Grade III, IV, and V field offices in early September 1997. The field offices were instructed by the BPR team to use the redesigned DL 44 application between September 17 and October 8, 1997, and during this period to send R&D copies of all DL 44s processed by their office that had a "yes" answer to the vision/P/M question. In addition, the field offices were again instructed to send a daily count of the total number of DL 44s processed by their office that were sent to Micrographics. Because the redesigned DL 44 had not been translated into Spanish, applicants requiring a Spanish translation were permitted to use an older version of the Spanish DL 44 form. During this post-redesign period, a total of 723 copies of DL 44 forms and 704 separate total form counts were collected and sent to R&D.

Data Screening

The number of days that each field office was open for business during each of the two survey periods ranged from 15 to 18 days, so each office should have reported from 30 to 36 separate daily counts of the number of DL 44s they sent to Micrographics. Although some field offices did an excellent job of consistently reporting their data, the majority of the offices unfortunately failed to send data for each day of both survey periods. A total of 12 field offices failed to report any data at all during the study. In addition, 53 other field offices reported data for only the pre or post period, or for fewer than 4 days in either survey period. Only 42 field offices reported complete data for 4 or more days in both the pre and post survey periods.

The DL 44 forms and total counts were screened by R&D. Because applicants are not required to report data regarding vision and P/M conditions for ID card applications, a total of 273 DL 44 applications for ID cards were removed from the data. Additionally, five DL 44 forms were removed because only the front of the application had been copied; 563 were removed because the applicant answered "yes" to only the suspended, refused or revoked license question (which was present only on the pre forms and accounted for the much higher number of "yes" forms submitted in the pre period); and one form was removed because the field office of application could not be determined from the form. This screening process resulted in 484 usable DL 44 forms for the pre-redesign period and 543 usable forms for the post-redesign period.

Three individual daily total form counts were not used because the field offices provided a count of the number of DL 44s sent to R&D instead of the number of DL 44s sent to Micrographics. One other daily count was not used because it was more than 4 times higher than any of the other daily counts reported by the field office, which indicated a recording error by the field office personnel. Another daily count was not used because the field office of origin could not be determined. In some cases where a total count was missing, but the field office had submitted all the DL 44s processed (not just those with a "yes" response to the vision and/or P/M question), R&D tallied the total counts for the field office. The screening process resulted in 679 total daily counts for the pre-redesign period and 698 usable total daily counts for the post-redesign period.

RESULTS

The numbers of usable vision and P/M forms in the two survey periods are presented in Table 2 as a function of the various reasons given by the applicants. For cases in which both a vision and a P/M disorder were indicated, the disorder considered to be more serious was used for tallying purposes.

A total of 704 of the DL 44 forms represented in Table 2 were not included in the percentage calculations because they were not considered to contain information on major vision or P/M disorders that would have resulted in a departmental investigation. The excluded forms were those on which the applicant (1) did not indicate a reason for checking the P/M question(s), (2) indicated that his or her only vision or P/M condition was that he or she wore glasses or contacts, or (3) indicated that his or her only vision or P/M condition was that he or she was far-sighted or near-sighted.

Table 2

Number of Vision and P/M Forms Sent to R&D
for each Reason Indicated by the Applicants

Reason	Pre	Post	Total
Glasses/Contacts	47	304	351
Far/Near-Sighted	30	69	99
Diabetes	10	38	48
Epilepsy/Seizures	29	11	40
Blind in one Eye	24	4	28
Alcohol/Drugs	24	3	27
Damage from Accident	11	3	14
Stroke	4	5	9
Psychological Disorder	5	2	7
Fainted	4	2	6
Cataract	2	4	6
Medication	5	1	6
Paralysis	2	3	5
Lazy Eye	5	0	5
Head Injury/Concussion	1	3	4
High Blood Pressure	4	0	4
Hearing Problem	3	1	4
Asthma	2	2	4
Leg Injury	3	0	3
Cancer	1	2	3
Hemodialysis	2	0	2
Arthritis	2	0	2
Parkinson's Disease	2	0	2
Mentally Retarded	2	0	2
Glaucoma	1	1	2
Macular Dystrophy	1	1	2
Heart Problems	0	1	1
Cerebral Palsy	1	0	1
Hypoglycemic	1	0	1
Hypothyroidism	1	0	1
Pregnant	1	0	1
Loss of Peripheral Vision	1	0	1
Multiple Sclerosis	0	1	1
Other Vision	14	27	41
Other Non-Vision	32	8	40
No Reason Indicated	207	47	254
Total	484	543	1,027

Note. Only seven cases had both a vision and an P/M disorder indicated. In these cases, the more serious disorder (whether vision or P/M) was the one used for tallying purposes.

Due to the potential for bias associated with the underreporting of data, only the data from field offices that reported complete data for at least 4 days in both the pre and post periods were included in the analyses. However, even within the 42 field offices meeting this minimum requirement, there was still high variability between the number of days for which they reported complete data in the two survey periods. Most of these field offices reported data for differing numbers of days in the pre and post periods.

To control for potential biases caused by the differential reporting of these offices in the pre and post periods, two different approaches for computing the percentage of vision and P/M applications in the pre and post periods were used. The first percentage was computed by summing the number of vision and P/M "yes" applications across the field offices in each survey period, and finding what percentage they represented of the sum of the total numbers of DL 44s processed by the field offices during each period. The second percentage was based on a weighting or standardization of observed percentages to simulate what the result would be, had each office reported data each day of the survey and also had the same volume of DL 44 activity in the post period as it had in the pre period. The estimates were computed following the standardization procedure outlined by Mosteller and Tukey (1977).

In computing the percentages, it was also necessary to take into account the fact that some of the forms submitted in the pre period were older DL 44 forms (Rev. 12/95). This older DL 44 form had a separate question regarding whether the applicant was a habitual user of drugs or alcohol, whereas the 12/96 revision had this inquiry integrated into the phrasing of the P/M question. Although it was not the original intent of this evaluation to determine the effects of merging the drug/alcohol question into the P/M question on the DL 44 (Rev. 12/96), it became clear that the presence of forms with this separate question dramatically increased the count of people in the pre period who indicated that they had a P/M condition resulting from their habitual use of drugs or alcohol. Specifically, there were 24 drug/alcohol cases in the pre period and only 3 such cases in the post period. This effect would have been even more pronounced, had all the field offices used the older DL 44 form in the pre period. Because of this disproportionate representation of drug/alcohol cases in the pre period, it was decided to compute the weighted and unweighted percentages mentioned above both with these cases included and with these cases excluded.

Table 3 presents the total number of "yes" DL 44s, the total number of DL 44s processed by the field offices, and the weighted and unweighted percentage of "yes" vision and P/M applications in the pre and post redesign periods both with and without drug/alcohol cases included.

When applicants who indicated habitual use of drugs or alcohol were included in the percentages of "yes" forms the difference between the pre and post percentages was statistically significant ($p < .05$) for both the unweighted and weighted comparisons. However, when habitual drug/alcohol users were not included in the computations, the difference between the percentages was not statistically significant for the unweighted and weighted comparisons ($p = .17$).

Table 3

Number of "Yes" DL 44 Forms Collected, Total DL 44s Sent to Micrographics, and Unweighted and Weighted Percentages of Vision and P/M Applications Before and After the DL 44 (Rev. 6/97) Form Redesign With and Without Drug/Alcohol Cases

Period	Number of vision or P/M DL 44s	Total DL 44s	% Vision and P/M Applications	
			Unweighted	Weighted
		Including Drug/Alcohol Cases		
Pre	114	37,724	0.30	0.32
Post	63	28,676	0.22 [a]	0.22 [b]
		Excluding Drug/Alcohol Cases		
Pre	101	37,711	0.27	0.27
Post	61	28,674	0.21 [c]	0.21 [d]

Note. Weighted percentages were calculated to simulate what the percentages would have been had the field offices reported usable data for each day of the pre and post evaluation periods and the same volume of DL 44 activity in both survey periods. [a]χ^2 (1) = 4.17, $p < .05$. [b]χ^2 (1) = 5.90, $p < .05$. [c]χ^2 (1) = 2.02, $p = .17$. [d]χ^2 (1) = 2.02, $p = .17$.

DISCUSSION

The study indicates a trend suggesting that combining the vision and P/M questions on the redesigned DL 44 (Rev. 6/97) form resulted in a 22% reduction ([1- (.21/.27)] x 100 = 22.22%) in the percentage of people self-reporting that they had a P/M condition that could affect their ability to safely operate a motor vehicle. Although this reduction did not reach conventional levels of statistical significance, the failure to do so could be due to the low statistical power and small sample size of the study. Hence, the study provides an insufficient basis to reject or confirm the possibility that combining the vision and P/M questions reduced the percentage of applicants self-reporting their vision and P/M disorders to the department. The obtained results are nonetheless more consistent with the hypothesis of a moderate reduction in self-reporting than with the hypothesis of no effect.

The study did provide evidence that merging the alcohol/drug question with the P/M question on the 12/96 revision of the DL 44 combined with the effects of the current changes to the DL 44 resulted in a significant 31% decrease ([1 - (.22/.32)] x 100 = 31%) in the percentage of applicants self-reporting P/M disorders to the department. This represents a total of 3,400 fewer cases being identified each year. A major source of this decline was a reduction of an estimated 1,400 persons self-reporting their addictions to drugs or alcohol under the revised format. Because only some of the offices in the pre period used the older form with the separate drug/alcohol question, the true magnitude of this effect is probably underestimated in this report.

Unfortunately, the extreme underreporting of data by 62% of the field offices in this evaluation undermines the reliability and interpretability of the findings. Although an attempt was made to ameliorate some of these problems by using a weighted analysis and using only offices meeting a minimum standard of reporting, the findings of this report should still be interpreted with caution.

Due to the limitations of the sampling and reporting, no attempt was made to investigate the testing, referral, or restrictive processes which occurred as a result of the applicants' self-reporting of vision and P/M conditions to the department.

RECOMMENDATIONS

The department should consider reinstating a stand-alone question on the DL 44 regarding whether the applicant is a habitual drug/alcohol user if obtaining this information is deemed to be of sufficient value to the department. Unfortunately, no recommendations can be made regarding the combination of the vision and P/M questions on the revised DL 44 due to the limitations imposed upon the study by the severe underreporting of data by the field offices. However if the department wishes to exercise caution and err on the side of safety, it may want to further revise the questions on the form to recapture the "lost" P/M cases.