

International Workshop on Transferability of CMFs Washington, D.C., 23. January 2011

Summary Notes

Key items from Workshop

- International transferability is key for maximizing/optimizing research efforts globally.
- True benefits can be realized if we are able to transfer scientifically based good practices to developing countries utilizing CMFs.
- Transferability is valuable and needed for practitioners who need this information when they have limited analytical resources, skills, time, etc. that they need to make decisions. Training for practitioners and professionals is required for the use of CMFs in these instances.
- Variability in CMFs is critical issue for international transferability.
 - Causes of variability are many and need to be documented in specific CMF research reports if they are to be accounted for during consideration for application. Some examples of items that affect variability include:
 - ADT effects on CMFs for flatter or sharper curves
 - Including daytime crashes for comparison when assessing value of RRPMS – showed increase in crashes when actually nighttime crashes went down.
 - Increasing change interval cycle on signals – CMF is affected by the initial interval, whether it was greater than or less than recommended intervals.
 - Many more presented.
- Problem of spillover
 - Effects underestimated if spillover sites used for comparison/reference group (e.g., red light cameras; speed control treatments; raised pavement markers)
 - Spillover sites: sites that are affected one way or another by the application of a countermeasure at a site under study.
- Problem of migration
 - Effects underestimated if migration sites used for comparison/reference group (e.g., Speed control treatments; all-way stops)
 - Migration sites: the observed safety condition is altered as a result of the application of a countermeasure at a studied site.

Key issues in transferability among domestic jurisdictions

- Types of Potential Domestic Jurisdictional Boundaries
 - Physical boundary of jurisdiction
 - Regions of the country
 - State to state
 - Within a state
 - Level of government jurisdiction
 - Federal, State, Local
 - Boundary of topographical or metrological change
- A primary issue is whether or not domestic users will recognize that there are jurisdictional transferability challenges? How will they recognize this situation?
- It is necessary that they are informed about what is coming, why and when. Education and training must be provided.
- Cultural Issues related to Transferability
 - Public Expectations
 - Government Expectations
 - Enforcement practices
 - Driver Expectation, Risk Taking
 - Speed, restraint use and alcohol/drug use
 - Driver accommodation
- Geometric Design Criteria that influence Transferability
 - Horizontal curves and super-elevation
 - Unusual intersections types
 - Lane widths combined with curves
 - Roadside/minimum ROW

Key issues in international transferability of CMFs

- In a given Country there might be only a very limited number of reliable SPFs or CMFs (or even none)
- Road Type Definitions; (2 lane rural roads in Italy are quite different from 2 lane rural roads in the US. Typical in US is 1080 cm, common in Italy is 850 cm). This may be the critical issue to deal with in international transferability.
- Base conditions for which the CMF is developed;
- Application Boundaries;
- Confounding factors and covariables not accounted for;

- Different traffic regulations (eg: speed limits) and level of compliance;
- Different geographic layout.
- A CMF developed in different countries are often applied without really understanding the true reliability of using them;
- Boundary conditions and potential confounding factors and covariables are generally not associated with a given CMF;
- Confounding Factors And Covariables
 - Design consistency meeting driver's expectations - Are we sure that "driver expectations" are the same worldwide? Even design consistency models should be developed or calibrated for the national conditions
 - Different traffic regulations: One above all the speed limits. US uses 96 to 128 KPH (leaning towards the lower levels overall) in the same conditions that the EU uses 90 to 130 KPH (leaning to the higher levels overall)
 - Geography
 - The need for reliable accident prediction models

Overcoming barriers to transferability

- Create an International Subcommittee at TRB or a permanent committee in some other venue. Reference made to success of TRB International Subcommittee for Roadside Safety.
 - Make a subcommittee or working group under the Safety Performance Committee.
- Build public databases with safety data (similar to the Long Term Pavement Performance Program (LTPP)) that can be used to do more involved and comprehensive safety analyses.
- Create examples of good/not so good ways to develop CMFs. Such examples should be both practical and build upon the materials provided in the CMF guidebook developed by FHWA. (NOTE: A new project by the National Cooperative Highway Research Program (NCHRP Project 20-7 (314)) was initiated shortly after the workshop. The goal of the project is to give guidance on how to document research to determine the quality of CMF studies. It will tentatively be completed in September 2012.)
- Always provide "true" boundary conditions (the ones that combined together have really been investigated in the study) and potential confounding factors as well as the values assumed by the potential covariables;
- Move from CMF values (or tables) to CMF functions accounting for covariables.

One particular view to expand transferability

- Families of Crash Modification Functions
 - Full range of anticipated conditions

- If needed, calibrated to local conditions
- Can be used with SPFs, and for analysis of sites, systems or functions
- Highly trained users of the CMFs
 - Understand which CMFs apply to each situation
 - Understand when an apparent CMF is not appropriate, or must be calibrated

Issues related to transferability to developing countries

- No complete knowledge of the extent of problem?
- Lack of capital (budget, technology, skills).
- Beliefs that richer countries are safer and without wealth you cannot be safer.
- Lack of availability of data
- Lack of expertise
- Political legitimacy of government: what are the implications?
- Governance dimension and implementation
- Geography and climate: constraints/ advantages
- Habits and customs (the rule of Law?, the use of road?)
- Other priorities (poverty, economic development, health...): what are the most important ONES?