# ON ALTERNATIVE START-UP DEMONSTRATION TESTS

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# START-UP DEMONSTRATION TESTS

- Mechanism used to determine acceptability of equipment

- Hahn and Gage (1983): accept when k consecutive successful start-ups are observed (CS for short)

- Balakrishnan and Chan (2000): modified CS procedure to allow for early termination (and rejection) when a pre-specified number of failures have occurred (CSTF for short).  Does probabilistic analysis.

- Smith and Griffith (2003a, 2005) also studied CSTF. Did probabilistic analysis differently using Markov chains. Provided practical guidance on choosing good tests. Did estimation when CSTF criterion was used as a stopping rule.


ALTERNATIVE START-UP TESTS


- Smith and Griffith (2003b) consider tests based on consecutive successes/consecutive failures (CSCF), total successes/failures (TSTF) and total successes/consecutive failures (TSCF).

- Used Markov chains for probabilistic analysis, provided practical guidance for choosing good tests and considered estimation when criteria used as a stopping rule.

- Compared these with CSTF and found that in some situations CSCF and/or TSTF had advantages. Practitioner to consider these tests and choose one which fits the context.

- Smith and Griffith (2004, 2006) considered multistate start-up demonstration tests. Two levels of success, exceptional and average, are distinguished.

- Markov chains used for probabilistic analysis in cases where criteria are consecutive or total successes/consecutive or total failures.  Estimation considered for each of the four cases.

- Smith and Griffith (2004, 2006) also considered scan start-up demonstration tests.  As in multistate case, probabilistic analysis is done with Markov chains and estimation is considered.

- Smith and Griffith (2006) consider time truncated versions of each of the CSTF, CSCF, TSTF, TSCF. That is, for example, in the CSTF case, rejection occurs not only if a pre-specified number of failures occur before the $k^{th}$ success, but also if the k consecutive successes have not occurred after a pre-specified number of start-up attempts.

- Markov chains again used in probabilistic analysis with the n step transition probability matrix playing an essential role.